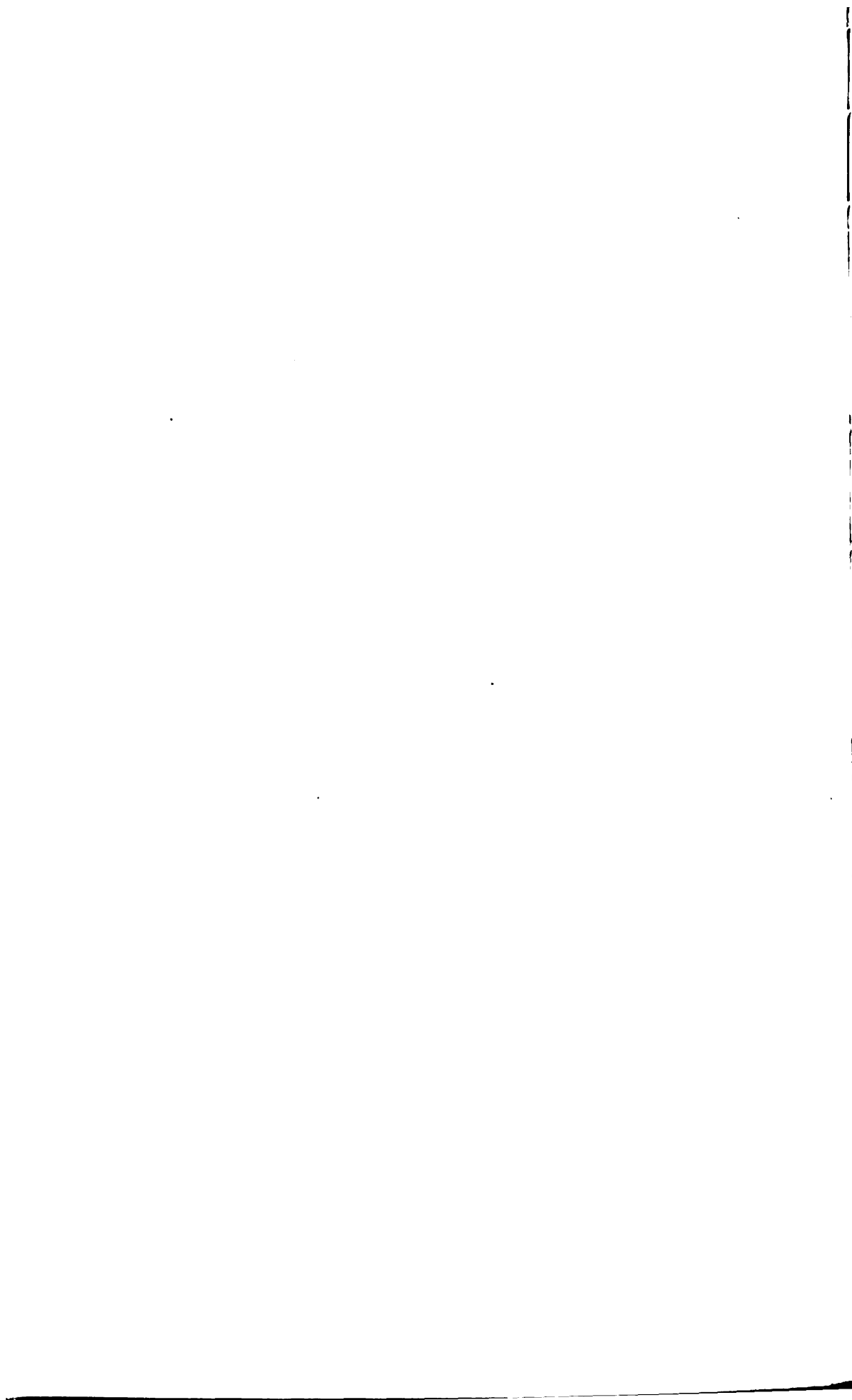








**REVIEW OF
NEUROLOGY AND PSYCHIATRY**



REVIEW
OF
NEUROLOGY AND PSYCHIATRY

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Review of Neurology and Psychiatry

Original Articles

CASE OF DISLOCATION BETWEEN THE ATLAS AND THE AXIS VERTEBRÆ, WITH PROBABLE FRACTURE OF THE ODONTOID PROCESS; RE- DUCTION, RECOVERY.

By DAVID WALLACE, C.M.G., F.R.C.S.E.,
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ALEXANDER BRUCE, M.D., F.R.C.P.E.,
Physician to the Royal Infirmary, Edinburgh.

THE following case of dislocation of the spine between the atlas and the axis, with probable fracture of the odontoid, is of such a remarkable character as regards its mode of occurrence, its clinical history, and the results of reduction undertaken five months after the original accident, when the patient was in extreme danger from pressure upon the medulla, that it appears to us worthy of being placed on record.

D. J., aged 40, married, a marine engineer, admitted to the Royal Edinburgh Infirmary, under the care of Dr Bruce, on the recommendation of Mr Wallace and Dr Millard.

(The following history is abstracted from the notes taken by Dr Bruce's resident physicians, Drs Greenfield, Hewat, and Newton.)

On Oct. 7, 1908, at 5.45 A.M., while oiling his engine, the patient heard someone suddenly speak to him from behind. He turned his head quickly to see who it was, and in doing so he felt his neck give a little "crick." At the moment there was

no pain or other discomfort or inconvenience. Shortly afterwards, however, he felt a lump in the back of his neck, and when he attempted to stoop his neck under a bar in the roof of his engine-room he found that his head was fixed, and that the attempt to move it forward was very painful. He discovered that he could not move his head to either side, but that he could move it slightly forwards. He could not stoop, however, and to pick anything off the floor, he had to get down on his knees, so as to avoid bending his neck forwards. He could use his arms and legs quite well [although he now (Oct. 1909) states that shortly after the accident he could not lift his legs fully in walking].

When his ship reached Finland he consulted a physician, who diagnosed rheumatism of the neck. For two months after this he remained on board his ship, not working, quite unable to move his head from side to side, but able to move it slightly backwards and forwards. He also now suffered considerable pain in the back of the head (evidently, from his description, in the region of the distribution of the great occipital nerves).

On returning to Edinburgh he consulted his own physician, Dr Millard, who found that, in addition to the pain in the back of the head and the stiffness of the neck, there were pains in the left shoulder and in the calf of the leg. Dr Millard treated him at first for rheumatism, and succeeded in relieving the pain; but he soon found that the stiffness was due to some underlying condition in the neck. He accordingly took the patient to see Mr Wallace, had an X-ray photograph taken, and diagnosed a dislocation of the upper part of the spine. The photograph (Fig. 1) showed a high degree of dislocation of the spine, between the atlas and the axis vertebræ. The atlas had slipped forwards on the axis, and it was also inclined obliquely, so that its body was depressed and its spine elevated. There was thus an unusually large gap between the tips of the spines of the atlas and the axis. The displacement was so great that it is difficult to understand how, even at that time, the cord could have escaped compression. As there were no compression signs, except a slight feeling of numbness at the tips of the fingers, and as the patient could walk and use his hands, it was not considered desirable to make any attempt to reduce the dislocation.

Some time afterwards, however, a most remarkable accident happened to the patient. On the evening of March 21, 1909, he had been sitting by the fire with a shawl over his shoulders. His little son in play caught hold of the shawl and tried to pull it away. In doing so he apparently jerked the neck sideways. This caused a sudden severe pain in the neck, mainly on the right side, and also on the back of the head. The patient was unable to lie down in bed that night on account of the pain which was produced in the back of the head when he attempted to lay it on the pillow, the pain being aggravated by the least forward movement.

On the following day (the 22nd) he felt some weakness of the fingers of both hands, which made him unable to use his hands for such fine movements as filling his pipe or striking a match. This weakness gradually spread up the arms and down the legs.

On the 23rd retention of urine developed, and it had to be drawn off by catheter.

On the following days the motor power in the legs and arms gradually diminished till they became almost completely paralysed.

On March 27 he was admitted to Ward 31 of the Royal Infirmary.

When examined, the paralysis of the upper and lower limbs was all but complete, there being only some power of flexion at the left hip and knee, and still greater limitation of movement on the right side. The paralysis of the upper limbs was even more marked, the only power of movement that was left being slight flexion and extension of the right index finger, and slight flexion of left wrist and of thumb and first finger. The diaphragm seemed altogether paralysed, the abdomen sinking in on inspiration and rising again in expiration. The respiration was very shallow, and carried out mainly by the accessory muscles in the neck.

Superficial Reflexes.—The epigastric, abdominal and cremasteric reflexes were absent. Both plantar reflexes showed extension of the great toes, with "fanning" of the other toes.

Deep Reflexes.—Patellar, adductor, and Achilles jerks were very active on both sides, and there was marked bilateral ankle clonus. The deep reflexes in the upper limbs were also abnormally active, and there was a slight jaw jerk.

Visceral Reflexes.—The bowels had not moved for a week, and there had been persistent retention of urine, requiring the use of the catheter.

There was some anæsthesia to pain over the front of the lower thorax and abdomen, and over the fronts and backs of the hands, as well as on the outer side of the left thigh and the inner side of the left leg. Some hyperalgesia was also present on the left arm and forearm. A large, firm swelling was felt in the back of the neck in the middle line just below the occiput.

Patient could not cough, and his dyspnœa was so great that while speaking he had to take a long pause after each word.

On the evening of the day of admission the difficulty of breathing became extreme owing to the upward pressure of the abdominal contents. Some relief was obtained when he was raised in bed, and propped up with pillows; but he scarcely slept during the night.

The urine drawn off by catheter was free from albumen and pus.

March 28. — Mr Wallace, Dr Millard and Dr Bruce, in consultation, thought that an attempted reduction might be suddenly fatal, and in the absence of the patient's wife hesitated to undertake it. A few hours later they met again, and decided that the patient's condition had become so critical that unless the pressure on the cord could be relieved by reduction of the dislocation, the patient had not many hours to live. The possible issues were explained to him and to his wife, who had been summoned, and he decided to take the risk. A will was written out for him, to which he made his mark with a pen between his teeth. He was then slightly raised in bed, a long towel placed behind the lower part of his neck and used to make traction upon it in a forward direction. Mr Wallace then, standing behind the top of the bed, and placing his hands below the jaws, made firm traction upwards and backwards. Almost immediately the head was felt to slip into its place, with a crunching noise, at the same time as the lump disappeared, while crepitus was felt by a hand which was supporting the upper part of the neck.

Almost immediately after the reduction of the dislocation, the patient felt greatly relieved. He began to cough, and it was apparent from the movements of the abdomen that the

diaphragm had resumed its function. There was a desire to pass water, but inability to do so.

The head was retained in a position of backward flexion by sand bags placed behind and at the sides of the neck.

In about five minutes after the reduction the patient was able to move his legs a little.

March 29.—Patient slept well. Micturition was now possible but precipitate. Slightly increased power in legs. Some movement in right shoulder. Breathing stronger, with apparently fuller action of diaphragm. Placed in a temporary poro-plastic jacket.

On the following days there was an attack of congestion of the lungs, with fine crepitations at both bases, delirium, attempts to get out of bed, a rise of temperature to 104.6° F., of pulse to 140° , and respirations to 42 per minute, with fine crepitations at both bases. On March 31, discomfort from abdominal distension relieved by enema. By April 1 the fever had gone, and the patient was more comfortable. During this congestive or pneumonic attack the power of the arms began to return.

By April 3rd could pass water once in three hours. Fingers of both hands now showed a considerable range of movement. All the analgesia noted on admission had disappeared.

By April 4th could move his right hand to within two inches of his chin, and could raise his left hand six inches from his body.

April 5th.—Touched chin with his left hand.

April 14th.—Lower limbs moved freely. Still most marked exaggeration of deep reflexes, and bilateral Babinski sign.

21st.—Could now retain urine for four hours and micturate voluntarily.

The poro-plastic jacket had to be several times remodelled, and it was taken off and reapplied about twice weekly.

From the end of April the progress was steady. A little pus which had appeared in the urine gradually disappeared. By the end of July he could feed himself, and by the 8th of August he could dress himself and could walk without support. By the end of September he was able to walk a mile. The strength of his arms had greatly increased. In the end of October patient could use his limbs almost perfectly, but the exaggeration of the

deep reflexes and the Babinski sign persisted, although in diminished degree.

The poro-plastic jacket, originally applied by Mr Wallace, was so moulded that it pressed the lower part of the neck forwards, and allowed the head to fall well back into a helmet-like headpiece, which prevented both forward and lateral movements of the head. In October the jacket was reduced to a collar capable of keeping the chin well up and allowing the head to go backwards. A skiagram (Fig. 2), made in the middle of July by Dr Forbes, shows that the dislocation had been completely reduced. The atlas and axis were in their relative positions, and the spine of the latter vertebra was now considerably nearer that of the atlas.

We are of the opinion that on the occasion of the first accident, in October 1908, there must have been a partial dislocation of the atlas on the axis, with a fracture, possibly impacted, of the base of the odontoid process. On looking at the negative of the skiagram carefully, one cannot see any sign of backward displacement of the odontoid process. Further, if there had been no fracture it is difficult to explain the crepitus which was felt during the reduction of the dislocation and the remarkable ease with which that operation was effected. On the other hand, it is difficult to understand the mechanism of the fracture arising from such a simple cause. Fracture of the odontoid appears to be a relatively frequent occurrence in injuries of the upper cervical spine associated with dislocation between its first two vertebræ, but in the majority of these cases the immediate cause has been some severe injury, such as a blow or a fall on the head or on the back of the neck. The site of the fracture is usually at the base of the odontoid, at its junction with the body of the axis, where there is probably a locus minoris resistentiæ owing to the persistence of a larger or smaller plate of cartilage as a remnant of the original line of ossification of the process with the body. In the absence of any evidence of disease—and in our patient there was no suggestion of any such—it is possible to suppose that this cartilaginous plate may have remained unossified to an unusual extent, and have given way under the stress of a sudden rotatory jerk.

Such cases are certainly extremely rare. We have heard of a similar case where an advocate pleading in a law-court turned

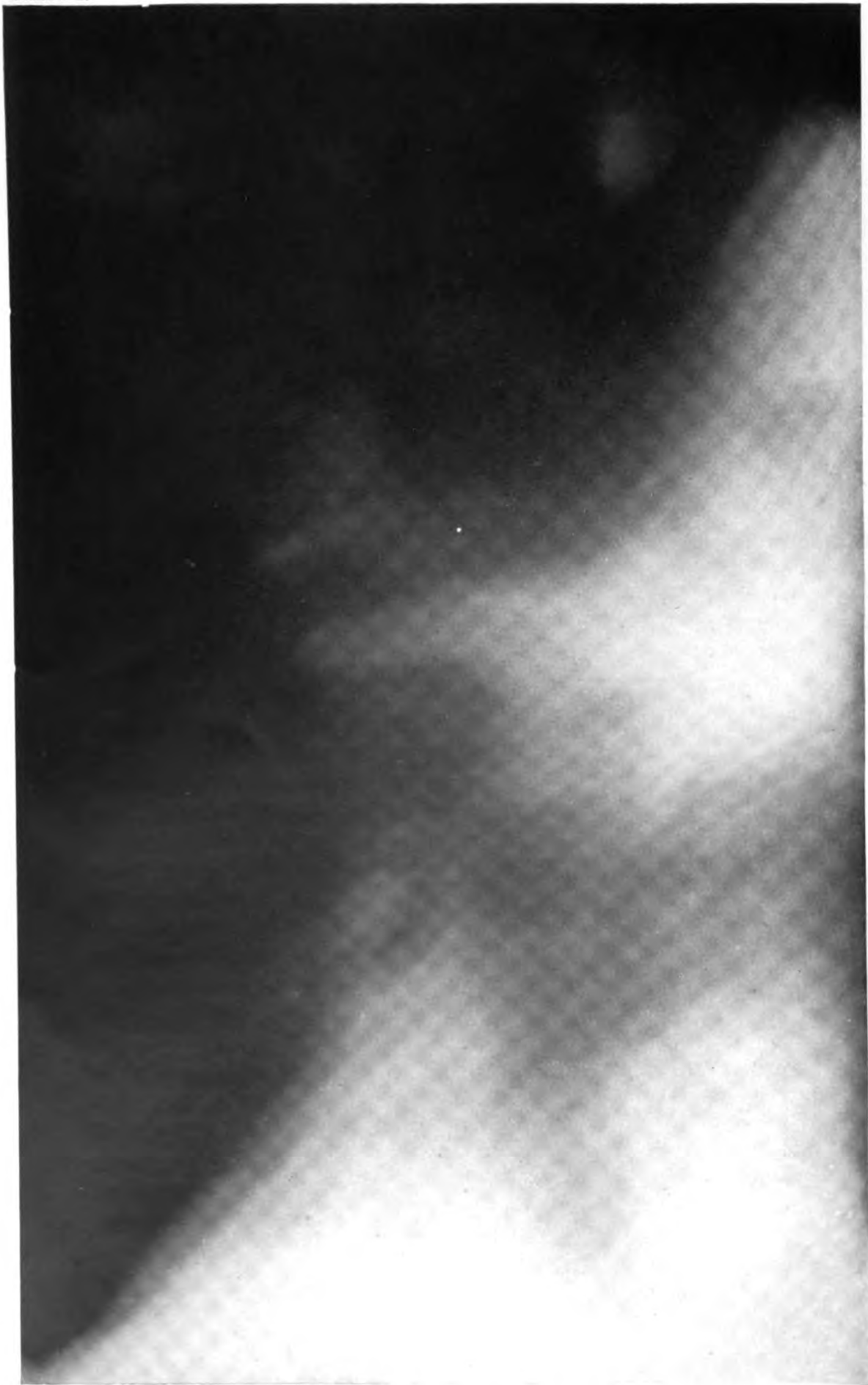


FIG. 1. *To illustrate paper by Mr Wallace and Dr Bruce.*

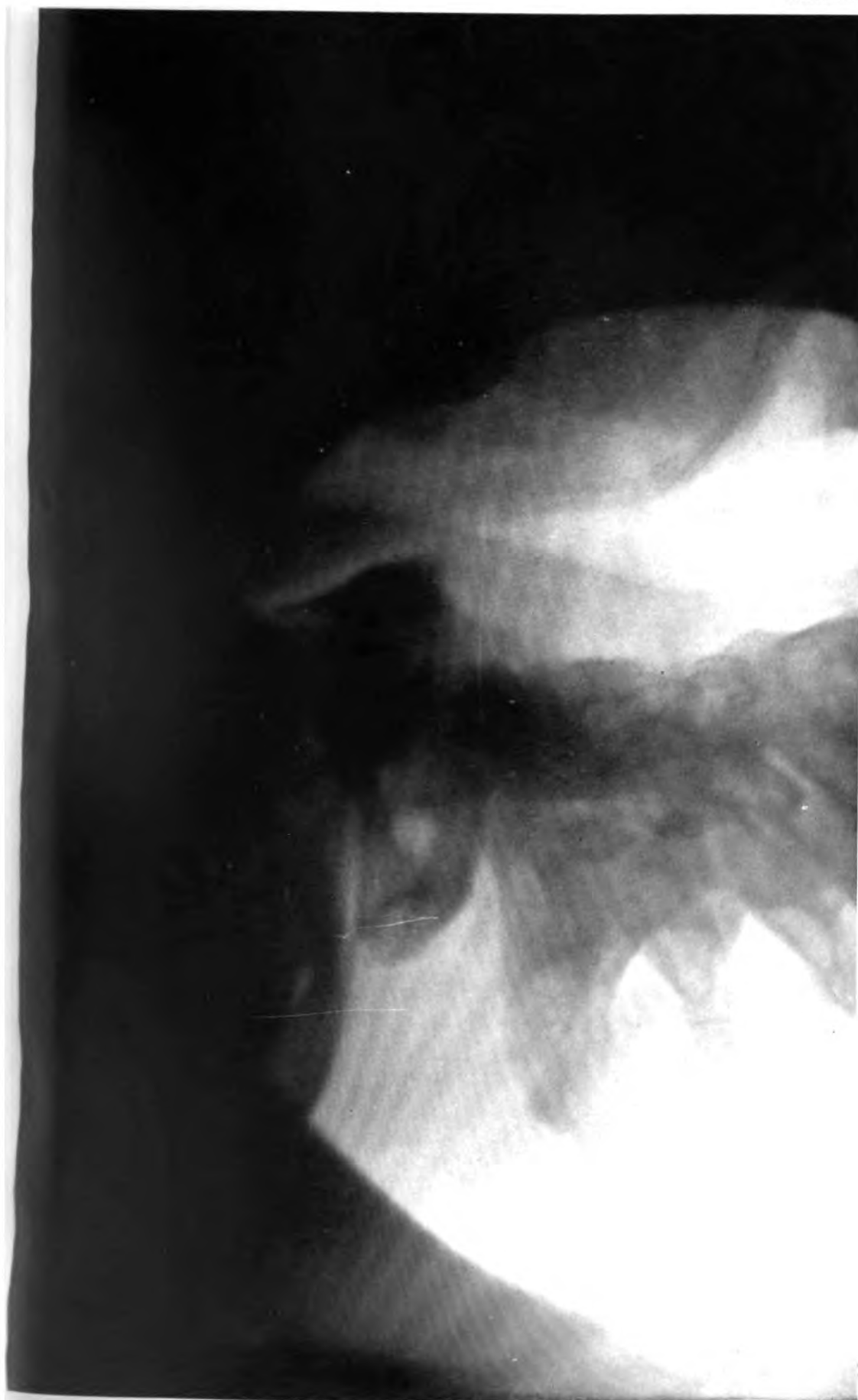


FIG. 2. To illustrate paper by Mr Wallace and Dr Bruce.

suddenly in the expectation of seeing an important witness whose arrival he was anxiously waiting, and found immediately thereafter that his neck was quite stiff, but we have been unable to find the reference. No doubt there are other cases, since Oppenheim refers to this possibility (*"Lehrbuch der Nervenkrankheiten,"* 5th edition, vol. i., p. 298), and it is also recognised in many surgical text-books.

The remarkable recovery which the patient made after the reduction from the grave paralytic symptoms, involving, as they did, all four limbs and the diaphragm, as well as the lower organic sphincters—symptoms which were due not to pressure merely, but also, as was shown by the persistence of the Babinski reflex for months afterwards, to myelitis—indicates that in all cases, however grave they may appear to be, an attempt should be made to reduce the dislocation. Indeed, the more urgent the symptoms, the more urgent is the need for the endeavour to relieve them. It is probable that by prompt assistance life would be saved, or at least prolonged. In this respect we would refer to the valuable paper by Eve on "Fracture through the Base of the Odontoid Process" (*St Bartholomew's Hospital Reports*, 1877). We are in entire agreement with the opinion which he there expresses, that recovery from fracture of the odontoid is not only possible, but hopeful, and that in every instance an endeavour should be made to reduce the dislocation. The less the delay in reducing the displacement—at least after the appearance of paralytic symptoms—the less the danger of pressure myelitis or of a rapid fatal termination, and the greater the gravity of the symptoms the more urgent is the need for an immediate attempt to reduce the dislocation.

As regards the subsequent treatment, our endeavour has been to secure such immobility of the atlanto-axoid articulation as to afford reasonable opportunity for union of the fractured parts. Such a union, if it can fortunately be secured, must necessarily be more or less easily broken down, and the patient, as in our case, should be warned against the danger of movements which involve the bending of the head forwards, and any repetition of the sudden lateral movements such as caused the unusual displacement. He should be advised to wear round his neck some light apparatus sufficiently rigid to support his chin, and to prevent sudden movement of the head.

THE MIXED FORMS OF MANIC-DEPRESSIVE INSANITY.¹

By GEORGE H. KIRBY, M.D.,
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New York.

THE interesting group of mental disorders described by Kraepelin and his pupil Weygandt as "mixed types" of manic-depressive insanity seem, as far as one can judge from the current literature and hospital reports, to have received little notice from alienists in this country. With the single exception of a brief article by August Hoch, no description of the mixed forms of manic-depressive insanity, with report of cases, has yet appeared in English. Recently a wider interest in this subject has been aroused because the Kraepelinian school now proposes to expand the conception of the mixed forms so as to embrace clinical pictures hitherto kept apart from the manic-depressive group. I refer to the work of Dreyfus, who, after reviewing Kraepelin's own cases of involution melancholia, concludes that the involution depression is a mixed form of manic-depressive insanity, and this view is supported by Kraepelin himself, who writes an introduction to the Dreyfus study.

Kraepelin performed a great service for psychiatry by showing the importance of making a closer study of the symptomatological picture and by demonstrating the value of certain symptoms as prognostic guides. The desire to discover diagnostic signs and to circumscribe "disease entities" led, however, too far in the direction of grouping psychoses in a schematic way with overestimation of the statistical method as a nosological principle; this resulted in a serious neglect of the factors at work in the genesis of mental disorders. In this respect Dreyfus seems to have reached an extraordinary position, and by emphasizing certain minor features in the symptom-complex of involution melancholia, and finding that recovery from the depression usually took place, he has used a method of analysis that will allow practically any functional or non-deteriorating psychosis to be included in the already extremely broad group of manic-depressive insanity.

¹ Read in outline before the American Medico-Psychological Association at Atlantic City, N.J., June 4, 1909.

It would seem, therefore, appropriate to give at this time a brief review of Kraepelin's conception of the mixed forms of manic-depressive insanity, to bring to a test its usefulness in actual practice, and to see if, as claimed by Kraepelin, such a view-point permits us to arrive at a proper interpretation and a correct prognosis of certain obscure clinical pictures, the symptoms of which do not, for a time at least, correspond with either of the two common phases of manic-depressive insanity.

As is well known, Kraepelin adduced a relatively simple formula to cover the essential features of the manic-depressive complex. The three cardinal symptoms of the manic attack were contrasted with the three characteristic symptoms of the depressive attack in the following manner:—

<i>Manic Phase.</i>	<i>Depressed Phase.</i>
Emotional Exaltation.	Emotional Depression.
Psychomotor Restlessness.	Psychomotor Inhibition.
Flight of Ideas.	Retardation in Thought.

It was not claimed that these three symptom-pairs were essentially opposites either in nature or origin, but were rather to be viewed as related phenomena of a fundamental disorder.¹

Kraepelin in his exposition of the mixed forms of manic-depressive insanity assumed that certain elements of the depressive phase could replace or combine with certain of the elements of the manic phase, or *vice versa* that manic symptoms could appear in the course of a depression. In other words, it was thought that attacks occurred in which both manic and depressive symptoms appeared simultaneously.

That such symptom-complexes as described by Kraepelin do actually occur is easily demonstrated if one follows carefully the symptoms presented throughout the course of the usual excitements or depressions; in a considerable number of cases one is struck not only by the lack of uniformity in the picture as a whole and the variability of individual symptoms during the course of the attack, but also by the appearance, if only for brief periods, of clinical pictures which harmonize neither with the

¹ In discussing the psychomotor symptoms of the manic-depressive attacks, on page 516 of his text-book, Kraepelin expressly says: "The inhibition and over-activity must therefore be regarded as closely related phenomena of a fundamental disorder."

manic excitement nor the typical depression. One sees often enough emotional fluctuations in the ordinary excitement or depression without a corresponding change in the psychomotor symptoms. Less frequently a change may be observed in the motor reactions without any alteration in the emotional tone. A manic patient may remain elated, while the busy activity is replaced by psychomotor inhibition. In depressive attacks a quiet, retarded patient may become suddenly loquacious and distractible, remaining at the same time inhibited in activity and depressed in mood.

In circular and alternating cases it is by no means uncommon to observe a gradual transition from one phase to the other, and to note that the change in the different symptoms is not always accomplished in the same space of time. For instance, in the transition from excitement to depression, the first change may be noticed in the lessened motor activity. A manic patient may become sluggish and prefer to remain in bed, yet for a few days continue to show elation of spirits and flighty talk, which later disappear as the oncoming depression is fully established. Finally, there are undoubtedly patients in whom the entire attack is made up of just such features as appear transitorily in the course of an otherwise typical excitement or depression.

These mixed conditions demonstrate that a very close association exists between the various components entering into the excitements and depressions, and one observes a peculiar intermingling of symptoms which appear at first sight almost antithetical. Thus one finds that a patient may show flight of ideas while at the same time considerable slowness and difficulty in thinking are present, or a patient may be restless yet at the same time retarded in action; still, other patients exhibit in their mood a strikingly odd mixture of depression and cheerfulness.

The occurrence of these mixed states was used by Kraepelin as additional evidence that the mania and melancholia of the older authors were merely different phases of the one disorder—viz., manic-depressive insanity.

From a purely schematic view-point a great variety of combinations are possible between the three fundamental symptoms of the manic syndrome and the three fundamental

symptoms of the depressive syndrome. Kraepelin thinks that at least six mixed types may be recognised as distinct clinical forms.¹

For purposes of description one may group the mixed forms of manic-depressive insanity under two main divisions :

1. States of emotional depression with manic symptoms.
2. States of emotional elevation with depressive symptoms.

By far the larger number of cases fall into the first division—namely, the depressions with manic symptoms. These may be separated into two clinical groups—the *agitated depressions* and the *quiet depressions with flight of ideas*.

The Agitated Depressions.—The patients grouped here show a depressed mood associated with restlessness and agitation, while at the same time a thinking disorder is manifested by distractibility and flight of ideas, or there may be definite signs of slowness in thinking, with restriction in the range of thought, and the patient is then monotonous and limited in expression. In order to illustrate the symptom-complex I shall at once quote briefly from a few case histories :

A woman of 51 was observed in her second attack. At first she presented the symptoms of a quiet, retarded depression. She had a dull, immobile face, was slow in speech and action, retarded in thinking, and without spontaneity, the clinical picture corresponding to the typical manic-depressive depression. Within a few days the condition changed. The signs of psychomotor inhibition disappeared, the patient became freer in speech and action, and finally restless and agitated; she then talked continually, was very distractible, and her stream of utterance showed a distinct flight of ideas with occasional sound associa-

¹ I append in tabular form the six mixed types described by Kraepelin. They are the following:—

1. Agitated Depression : depression, motor excitement, flight of ideas.
2. Depressive Excitement : depression, motor excitement, thought inhibition.
3. Unproductive Mania : exhilaration, motor excitement, thought inhibition.
4. Manic Stupor : exhilaration, motor retardation, thought inhibition.
5. Depression with flight : depression, motor retardation, flight of ideas.
6. Mania with retardation : exhilaration, motor retardation, flight of ideas.

I have not found it possible to make any satisfactory clinical distinction between the first two types, and include both under the "agitated depression" which may show either flighty tendencies or signs of thought difficulty, but very often both flight and thought difficulty occur at the same time. The last-mentioned type, "mania with retardation," is a rare combination as far as any objective signs of slowness of motion are concerned, although one sees often enough manic patients who show remarkably little restlessness.

tions. The following stenographic examples of her productions will illustrate these points:—

"It's all over, there is nothing more to be said now—no, she won't know what to say, because it's all been said (refers to questions asked another patient). I don't know if there are any more wily stenographers or anything at all (refers to stenographers writing)—everything is stopped—that's right, you won't be able to understand a thing after a few minutes (refers to physician taking out his watch)—I don't know what to do—don't know how to give orders—I don't know what to say—what can I do—what shall I say? I am powerless to do or say. What's your writing doing? You are writing 22 all the time (sees the date written)—no writing will do any good. . . . Oh, Lady Wright, you will meet your rights too (another patient named Wright). . . . Things are getting worse and worse—was it your wife I saw yesterday, doctor?—I don't believe he knows whether he is married or not—excuse me, doctor, do you think this will ever be righted?"

Combined with this productivity of speech, there was still a great difficulty in thinking. The patient described her mental state in the following words:—"I am confused—I am all stunned—I am paralysed." Her mood was anxious—she talked of her sins—expected the world to be destroyed, and expressed fantastic and nihilistic ideas. It was very striking that in the midst of this intense depression the patient sometimes smiled, and she herself commented on this, saying: "I have to laugh even though I am so upset."

In this case there seemed to be a mixture of both manic and depressive symptoms, the depressed mood and difficulty in thinking appearing with motor restlessness, great distractibility and a well-marked flight of ideas. The case exemplifies the mixed form of manic-depressive insanity known as the "agitated depression." The resemblance to involution melancholia was entirely superficial.

A very interesting agitated depression was presented by a woman of 32. She had two previous circular attacks with recovery, which left no doubt as to the diagnosis of manic-depressive insanity. In the third attack the following condition was observed:—

The patient in an anxious, worried mood showed great

concern about her health, believed that she had some blood disease, and feared that she would never get better. There was an intense feeling of physical insufficiency. She complained that her limbs felt tired and "powerless," and she talked of the muscles being "stiff" and "paralysed." Notwithstanding this marked feeling of motor inadequacy, the patient was extremely restless. She moved about with quick steps, rubbed her hands, picked the skin off her face, complained that she could not keep her hands still, and was unable to sit quietly. While in this depressed, restless state, she was very talkative, harped on her physical complaints, implored help, sought reassurance that she would recover. If allowed to, she would talk on unendingly, repeating herself a great deal, dwelling on the same topic, even at times reiterating set phrases, showing a distinct narrowness of thought. No flight of ideas or distractibility was observed. She did not admit any feeling of mental difficulty, but always emphasized the fact that the trouble was "weakness in the body." It was not uncommon for the patient to smile when tearful and talking of her unhappy state.

This case showed, then, an agitated depression with psychomotor restlessness and garrulousness, but at the same time a decidedly restricted range of thought. The point of particular interest was the peculiar combination of a feeling of physical insufficiency with marked psychomotor restlessness.

In the agitated mixed forms one sometimes sees very curious contrasts in mood which apparently depend on an extremely labile emotional state. As an example I might cite the case of a woman of 59, admitted in her fourth attack. She was depressed, tearful, clasped her hands, talked of her wickedness, and said she was deserted by God. Yet the patient intermingled these despondent and self-condemnatory statements with smiles and jocose allusions, and she could be easily influenced to laugh if the physician made cheering remarks. Occasionally she showed some distractibility, and a few flighty elaborations were uttered. Later, the anxiety and ideas of unworthiness disappeared, but the mild elation and humorous mood persisted for some time. This case illustrates what a peculiar mixture of mood may occur. The general picture was that of an agitated depression, but some manic traits could nearly always be demonstrated.

The mood in these agitated depressions is usually one of anxiety, though in some instances the patients appear more bewildered and perplexed than fearful. One does not find the sadness and quiet despondency as in the typical retarded depression, but instead there are uneasiness, puzzling, anxious anticipations, and fears of impending harm. With great frequency one observes fluctuation in the emotional state when the patients smile or show a transitory cheerfulness.

The restlessness seems to stand in close relation to the anxious state of mind, and very often a patient though restless may be slow, constrained and limited in the range of activity.

The thought disorder is exhibited in the wandering of attention, the tendency to comment, or the flight of ideas. On the other hand, there may be definite signs of thought difficulty with complaints of mental dulness and slowness in thinking.

Quiet Depressions with Flight.—This second group of *depressions with manic symptoms* is made up of patients who are depressed in mood and reduced in spontaneous activity, yet at the same time their utterances show distractibility of attention and flight of thought. The mood in these cases shows none of the anxiousness of the agitated depression just described. These patients are sad, despondent, and hopeless about the future. They express self-accusations and feelings of remorse, often attempt suicide or inflict self-injury. Some of the cases included here show a marked degree of perplexity, the patients puzzle and ponder over the simplest things seen or heard and are intensely distractible.

The psychomotor inhibition is usually shown in the slowness of motion, but there may be merely a lack of initiative with a tendency to remain in one place. The patients may talk much or little, but their productions show at once that they do not remain with the topic, but instead drift into flighty elaborations, with sound association, and they are easily distracted by incidental occurrences. Although showing well-marked distractibility and flight, the patients may speak slowly and complain that they are mentally dull, without brains, have no sense, etc. This very interesting combination of flight of ideas with thought difficulty is especially well shown in this mixed form. Brief reference to a few cases will illustrate this clinical type.

A patient, 51 years of age, had passed through seven previous attacks of either excitement or depression, but in the eighth attack she showed the following symptoms :—

She remained calmly in bed, did not move much—she felt down-hearted, and had a dull, dejected facial expression. She talked slowly and wearily, yet kept up a fairly steady stream of utterance, and one readily observed that she was distractible, drifted from one topic to another, and showed, in fact, a mild flight of ideas. No difficulty in thought was demonstrated objectively, but she complained of a dull, heavy feeling and loss of ambition.

To a question as to how she felt, the patient replied :

“Kind of sad and dull—I see all that you put down there . . . I know everything—it is good to write them things, isn't it?—everything in such a hurry (physician writing rapidly)—it's too bad to come here—that's why I should have put all those places out of my head, for if I had I would never have to return—telephones again (overheard telephone again) . . . they sound the heart with that, don't they? (physician's stethoscope)—my heart is strong, isn't it?—there is the boat again with some more unfortunates (hears boat whistle on the river)—every word they say you seem to write down.”

The combination of symptoms in this case was that of a depressed mood with reduction in activity, yet at the same time the patient was talkative, distractible, and showed a flight of ideas.

A young woman of 21 was seen in her first attack. She was depressed, expected punishment for wrong-doing, was despondent and self-depreciatory. She was dull in appearance and retarded in movement. She answered questions slowly, and complained that she could not think clearly; she was imperfectly oriented. It was found that in answering questions she talked on and on, elaborated extensively, showed distractibility and definite flight of ideas with sound association. Because of her slowness in utterance and the long pauses, the flight of thought might have been easily overlooked.

The following specimen of her talk shows the shifting of topics and the divertibility, and also contains an instance of word-sound association :—

“I never was bright—I tried to learn, but I never could—

I guess everybody in the world is brighter than me . . . I wish I knew how to typewrite (notices typewriter)—I never could learn it though—I have always thought I knew how to *draw*, but I never did, I guess—all this *Thaw* case they tell and read about, and I never liked to read it. . . .”

The patient expressed some peculiar ideas, *e.g.* claimed that she was in doubt as to who her parents were, and at home she had maintained that her stepmother's baby was the servant girl's baby. Later there was a period of mutism. The case was first presented at the Staff-meeting as one of dementia præcox. The features of a mixed manic-depressive condition were, however, recognised, and a good prognosis accordingly given.

The patient recovered, and later had an exhilarated excitement, showing a typical hypomanic state, which still further confirmed the diagnosis of manic-depressive insanity. The patient showed in the first attack a mixed state in that she was depressed, retarded in thought and action, but at the same time exhibited distractibility and flight of ideas.

A woman 25 years old was observed in a first attack. The patient was depressed and self-reproachful, called herself a “human devil.” She refused food, and wished to die. She was very inactive, remained in bed, kept her head covered, and for long periods of time was not seen to move. Sometimes she was mute and resistive, again she talked with freedom, was often loquacious, the stream of thought covered a wide range of topics, showed a flight of ideas, with many sound associations. A sample of her spontaneous talk will illustrate:—

“Mother dear, Lillie is a devil—Frank *Brothers*, a shoe store on 6th Avenue—golden peacock—Lillie *Alston* is going to *Boston* this summer—*Boston*—*Boston burglar*. . . . I saw the Labour Day Parade—all the bakers—all the butchers—all the merchants—and the sun shone out in all its glory—but there is no more sun because I am a damn devil—Chicago, the windy city—Milwaukee with all its bells ringing—Battle Creek, Michigan—Milwaukee, Wisconsin—Niagara Falls—now I remember M'Kinley was shot at that place—yes, all the Russians and Jews—the Czar of Russia and the Czarina—St Petersburg, Rome—I'll write to the Pope and see why I'm not burned alive.”

Some fluctuations in her mood were noted; there were

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occasional outbursts of anger, again she smiled, made some witty remark or related a joke, but in a moment relapsed into her doleful, depressed trend.

Later the picture changed, the inactivity and depression disappeared, and a typical manic state developed with great exhilaration, over-activity and flight of ideas. During the early phase a mixture of symptoms was evidenced in the depression and absence of spontaneous activity, combined with a flight of ideas. While in this mixed state this case was also considered by some of the physicians on the Staff to be one of dementia præcox. This was probably due to the periods of mutism, refusal of food, the resistiveness, and the peculiar habit of keeping her head covered. The presence, however, of a definite flight of ideas, and the fluctuations in the mood were recognised as the most important prognostic signs.

In some of these states of depression the manic features may be very slightly developed, and other symptoms be present which give a catatonic colouring to the case.

A young man of 20 was admitted to the hospital in a dull, inactive state. He resisted the nurses, refused to speak, showed catalepsy in the arms. In a few days, however, he began to show distractibility, and though he did not speak much he mumbled a good deal. During some of the interviews he drifted from one topic to another, and commented on what he chanced to see or hear. His facial expression portrayed perplexity, and he complained of being "mixed up." Often he did not answer questions, or merely muttered something which could not be understood. The case was at first thought to be one of dementia præcox. This diagnosis was based probably not only on his peculiar behaviour in the hospital, but also on the fact that at home he had expressed some strange notion about his own identity. On further consideration of the case, however, the mixed features were recognised, the essential symptoms being a depression, with slowness of motion, difficulty in thinking, and lack of clearness, while at the same time there was evidence of distractibility and of a failure to keep to the topic. The peculiar behaviour shown was not incompatible with his inability to grasp the situation and with his perplexed state of mind. The depression was succeeded by a typical manic excitement and recovery. When convalescent the patient described his condition

during the depression by saying that he had felt tired, could not concentrate his attention, many thoughts went through his head, and his mind seemed confused. He had resisted because he was puzzled and afraid.

It now remains for me to describe briefly the *states of emotional elevation with depressive symptoms*. Two clinical forms may be recognised: the *manic stupor* and the *unproductive mania*.

Manic Stupor.—This was the first mixed form recognised by Kraepelin, and is supposed to arise from the association of the two depressive symptoms of difficulty of thought and psychomotor inhibition, with a manic mood of exhilaration. These patients are very inactive, speak little or none at all, and only the facial expression may reveal the cheerful mood; one observes frequent smiling and even laughing. The patients may remain inactive and silent in bed, but nearly always they are given to little tricks and fun-making, and a high degree of distractibility is usually present. This mixed condition, when it persists for any length of time, is very apt to be mistaken for the catatonic form of dementia præcox. The case which I wish to describe briefly is a patient whom we have seen in several attacks; she has often been demonstrated by Professor Meyer in his clinics, where she has been repeatedly regarded, by physicians called upon to examine her, as a deteriorated patient. During the past eighteen years she has recovered completely from five attacks, all of which have been exactly alike.

During the psychosis the patient is practically mute. She sits about the ward with head slightly bowed, watches slyly what goes on, smiles freely, turns her face away when noticed. Her movements appear inhibited, her actions are hesitating and incomplete. From time to time, however, she seems to break through the restraint, and accomplishes quickly some playful prank, *e.g.* leaps up on the table, grabs something from another patient, jumps into bed with her clothes on, pulls at the physician's coat-tail as he passes along, or snatches his pencil as he writes. When pressed with questions her lips move, she smiles much, but seldom speaks. Sometimes after a pause of a few minutes she answers a question, and occasionally she blurts out a remark spontaneously. Her few replies to questions always show good orientation. The same inhibited behaviour, with starting and

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stopping, is seen in all of her activities, such as eating, dressing, walking, writing, etc.

In this case the patient gives evidence of being exhilarated, as shown by the smiling, the playful tricks, and the mischievous behaviour, but at the same time she is silent, and appears inhibited in both speech and action. When she recovers she tells us that during the attack she felt stupid, had no desire to talk or do any work. No delusions or hallucinations have appeared in any of her attacks.

Unproductive Mania.—This is the second mixed form grouped under the states of *emotional elevation with depressive symptoms*. These are patients who show exhilaration and psychomotor excitement, but instead of the speech productivity of the manic there are few utterances, sometimes even mutism. The patients look happy, and are restless and busy, mischievous and erotic. They seem to be inhibited in thinking, therefore speak very little or make simple and absurd remarks.

A schoolgirl of 16 was seen in a second attack. She was at first entirely mute, but showed a great deal of smiling and grimacing, was very restless, performed many antics, stood on chairs, turned somersaults, sprang from bed to bed, pulled pictures from the wall, jumped into a tub full of cold water, showed constantly much restlessness and a great deal of hilarious activity. With this exhilaration and excitement she did not talk at all. Later she began to speak, and showed a flight of ideas, the clinical picture corresponding then to that of the ordinary manic excitement. On recovery, she said that when she was mute her head felt heavy and questions annoyed her.

Such phases are not infrequent in the beginning of a manic attack, and appear to grow out of the association of a manic mood and psychomotor excitement with some thinking difficulty, as evidenced in the patient's lack of speech productivity and complaint of mental dulness. When mutism is present the differentiation from catatonic excitement may be difficult if one has to depend merely on the symptomatological picture.

In the foregoing groups I have attempted to sketch merely in outline, and give illustrations of, the mixed types most commonly met with in practice. It must be remembered that the divisions are more or less arbitrary, and that gradations and manifold transitions are to be expected. Of all of the cases used

as examples it can be said with reasonable certainty, in view of the outcome of the psychoses and the appearance during their course of typical phases, that they belong to the manic-depressive group. A review of a large material shows that clinical pictures such as have been described occur frequently in manic-depressive attacks, not only as a transitory phase but also as a symptom-complex lasting for weeks or months, and in a number of cases the entire psychosis has the characteristics of a mixed attack. The recognition of these mixed forms is, therefore, a matter of practical importance.

Many of the cases occurring in young persons are regarded as dementia præcox, until later on in the psychosis a typical manic or depressive attack appears and is followed by recovery. It is especially important to realize that in these mixed conditions particularly, reactions occur resembling very much certain symptoms which one often hears mentioned as ominous prognostic signs and then referred to dementia præcox. Thus one finds in mixed attacks conduct which appears odd and inconsistent; peculiar and fantastic ideas are frequently expressed and reactions are observed which simulate closely the incongruity between mood and thought seen so often in deterioration cases. It must be strongly emphasized that in these mixed conditions, as in other psychoses, *we can not safely attach diagnostic or prognostic importance to individual symptoms unless we know something of their foundation and the general setting in which they occur.* This means careful consideration of all the facts obtainable regarding the development of the psychosis, including the type of personality to start with, the causes responsible for the unbalancing, the mode of onset, as well as a painstaking study of the individual clinical symptoms. In cases analyzed in this way we can show that the peculiar behaviour and unusual emotional reactions above mentioned have an entirely different origin and meaning from the superficially similar symptoms seen in dementia præcox.

It would lead too far to undertake on this occasion a full discussion of the questions raised by Dreyfus in his attempt to identify involution melancholia with the mixed forms of manic-depressive insanity.¹ Suffice it to say that his argument is

¹ For an abstract and discussion of the work by Dreyfus, see the *New York State Hospitals' Bulletin*, Dec. 1908, p. 499; also *Rev. of Neur. and Psych.*, 1908, p. 61.

based principally on the idea that the insufficiency (or inhibition) complex may appear merely in the form of a feeling of inadequacy, not of a general nature, as is usually the case in manic-depressive depressions, but as a feeling of subjective inhibition of a partial or circumscribed character. That is to say, the feeling of insufficiency may be felt in only one or several of the various mechanisms by which the mental and motor reactions find expression, *e.g.* a patient may complain of a feeling of indecision, loss of will power, lack of ambition for work, and inhibition of the natural feelings of affection or love, while as regards memory, mental grasp and rapidity of thought, there is no feeling of inadequacy. Such a condition of "partial" or "selective" subjective inhibition, common in manic-depressive depression, is also, according to Dreyfus, a characteristic of the involution depression, frequently coupled with fleeting changes in mood; in view of this fact and of the fact that the involution depressions do not show deterioration in spite of long duration, the conclusion is reached that these depressions belong to the manic-depressive group.

The whole work is a good example of the statistical method; we learn from such an analysis how many patients showed certain symptoms, and how many recovered. The author's aim was to see if the symptoms present fitted into a particular schematic formula supposed to characterise a definite form of disease. A few unimportant features in the symptomatology were picked out, and because the patients recovered, these symptoms were raised to diagnostic importance. As a matter of fact, we could hardly miss just such symptoms in *any kind of a depression at one time or another*.

The occurrence of an anxious affect is by no means uncommon in manic-depressive attacks, and the agitated mixed type which has been described gives the general picture of an agitated depression; the presence, however, of manic traits will usually serve to differentiate these cases from a group of involution depressions, in which manic-depressive features cannot be demonstrated, and to force these into the manic-depressive group is not justified by any facts brought out in the work of Dreyfus. Our material affords many reasons for keeping a group of involution depressions apart from the manic-depressive psychoses; the former appear to arise out of a different etiology, show important

symptomatological differences, run a different course from the manic-depressive depressions, and are especially dangerous to the life of the patient.

From a theoretical point of view the mixed phases of manic-depressive insanity are of great importance, and the occurrence of such peculiar combinations of symptoms must be taken into consideration in any conception of the nature and mechanism of the manic-depressive reaction. Neither experimental psychology, physiological chemistry, nor studies in metabolism have so far given us any knowledge as to the nature or the cause of the manic-depressive attacks. Anatomical studies do not indicate that we have to do with any essential brain disease. An analysis made by Hoch of the constitutional type or mental make-up of individuals who suffer from manic-depressive attacks has developed a most interesting and stimulating line of thought.

The manic-depressive reaction when observed in its simplest form does not appear so much as a special disease or pathological process as an exaggeration of conditions belonging to our normal experiences (Meyer). This prototype in normal life is found in the emotional variability and fluctuations in efficiency and capacity, which, although often only faintly developed, seem to be an intimate part of our make-up. When these emotional waves and fluctuations in activity become sufficiently marked to attract attention, we recognise the individual as a slightly abnormal person, and from these unstable individuals, who show merely such constitutional oscillations, the transition to the mildest types of manic-depressive insanity seems clear and well-marked. Although the simple manias and depressions appear to have their prototype in certain biological reactions deeply rooted in our make-up, we do not as yet know how to account for the peculiar combinations or dissociations which occur in the *mixed* manic-depressive attacks. Whether or not such mental states have a recognisable counterpart in normal mental life is a question that calls for further analysis of types of personality, and particularly for a study of the make-up of those individuals who show such mixed phases as have been described.

Summary.—The foregoing review leads to the conclusion that in the concept of the mixed forms of manic-depressive insanity Kraepelin has furnished us with a view-point helpful in the understanding of certain obscure clinical pictures, because it

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allows us to identify in unusual combination the same mood abnormalities, though disorders and psychomotor reactions that we know and use as prognostic guides in the ordinary manic-depressive attacks.

Clinical experience teaches that mixed states occur frequently as transitory phases in the course of otherwise typical manic or depressive attacks, and in some cases the psychosis during its entire course has features of a mixed condition. Because of the odd clinical picture and reactions that appear inconsistent, the mixed attacks are most often mistaken for dementia præcox. A more careful analysis of these mixed phases is urged in order that we may learn to recognise such clinical forms when they appear independently of typical manic or depressive attacks. Further investigation of the types of mental make-up, out of which manic-depressive attacks develop, is most important, and may throw light on the peculiar combinations of symptoms seen in the mixed phases of manic-depressive insanity.

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Abstracts

ANATOMY.

THE NEUROFIBRILLARY CONDUCTING PATHS. (*Les voies*
(1) *conductrices neurofibrillaires.*) HERMANN JORIS, *Journ. de*
Neurol., Sept. 1909.

So much has been written on the subject of the neurofibrils, their histogenesis and their function, that a critical examination of the views which have been put forward concerning them during the last few years will be welcomed by many readers. The paper by Joris is based on observations made by himself and by Bethe, Cajal, Bielchowsky, and others. Metallic impregnation and staining with methylene blue have been the methods employed.

Histological Characters.—The neurofibrils are described as being very fine, smooth in outline, and of a uniform thickness throughout their extent; they are grouped into small bundles in which the separate fibrils run a parallel course for a long distance and do not divide. When they reach the cell body of the nerve-cell, they separate from one another, and may divide and anastomose so as to form a reticulum within the cell. This reticulum is formed of meshes of equal size, and the neurofibrils bounding them are of uniform thickness. Three types of cell have been described: (a) cells in which all the neurofibrils entering the cell take part in the formation of the reticulum which occupies the whole cell (cells of the posterior root ganglia); (b) cells whose fibrils pass through to the axis-cylinder or to other processes without dividing at all (bipolar cells); (c) mixed cells in which there is a considerable reticulum in the central portion of the cytoplasm of the cell, but still some fibrils pass through without division. Various degrees of this are seen in the cells of the spinal cord, bulb, and cerebrum. The above description of the fibrils differs from that of Cajal, who speaks of two types of fibrils, primary and secondary, which are of different size. He also speaks of their forming angles and of some portions being thicker than others. Joris says these variations are due to "agglutination" of two or more fibres and to deposits along the course of the fibrils.

Histogenesis.—The neurofibrils appear very early in the neuroblast; in fact, before there is any cell-process visible; they are formed in one zone in the cell, the fibrillogenic zone. The origin of the fibrils is not yet settled—whether, that is, they are a growth outwards from one central neuroblast as a differentiated product of its cytoplasm, whether they are formed in other nerve-cells

outside this primary neuroblast and become united to those formed in it (cellular syncytium), or whether there are cells not equal in importance to the primary neuroblast (Leitzellen) which participate in the elaboration of the fibrils. Joris suggests that in any case they represent the morphological adaptation of the cell to its function, which is conduction. The conductivity of a nerve depends on the integrity of the neurofibrils which have been demonstrated throughout the whole neuron, nerve-cell, fibre and process. In the neuron they are bathed in a non-differentiated cytoplasm or perifibrillary substance; this substance is almost entirely if not completely interrupted at the nodes of Ranvier. But although it may be asserted that the neurofibrils conduct nerve stimuli, it is not certain that the transmission of these is limited to the neurofibrils; the cytoplasm of the neuron may also transmit nerve stimuli.

The Arrangement of the Fibrils in the Processes of the Nerve-Cell.—The fibrils of the reticulum in the cell collect into a bundle at the cone of origin and pass into the axis-cylinder. In this they have an undulating course, and do not divide between the cell body and their termination. Fibrils also pass along the protoplasmic processes. Where the process divides, the fibrils separate into two bundles, and one goes into each branch. Sometimes some fibrils divide at this point, and a section passes into each branch; the size of each section is equal to that of the original fibril. Bethe has pointed out that, when a protoplasmic process divides into two branches, fibrils are sometimes seen to pass from one branch into the other—that is, that a fibril has come in from the periphery along the one branch and passed into the other without coming into relation with the body of the nerve-cell; this is most frequently seen in the processes of the cells of Purkinje. This observation, if correct, has an important bearing on the question of the nerve-cell being the true centre of the neuron and also on the law of dynamic polarisation.

The Arrangement of the Neurofibrils at the Extremity of the Peripheral Nerve Fibres.—The researches of Ramon y Cajal, Dogiel, and others have shown that the fibrils at the end of motor and sensory nerve fibres do not end freely, but form delicate networks which anastomose with one another. This anastomosis occurs only between the networks connected with the fibrils of the same nerve fibre, sensory fibre or motor fibre to striated muscle. In the case of the smooth muscle—intestines and blood vessels—anastomoses take place between the networks connected with the fibrils of different nerve fibres.

Arrangement of Neurofibrils at the Extremity of Nerve Fibres in the Centres.—The author first refers to the network of Golgi around the body and processes of the nerve-cell, but states that its nature

is not yet known, *i.e.* whether it consists of the fibrils of axis-cylinders or of neuroglia ; nor is it known how the fibrils of the axis-cylinders get into contact with the cell, by button (Endknöpfchen, Auerbach), ring, or network.

Fibrils at the Extremity of the Protoplasmic Processes.—In the intestine fibrils can be traced from the process of one neuron into the process of another neuron, and even to the cell-body of the second. Generally, however, the arrangement is more complex. The fibrils may come into contact with the process of another cell ; it may pass on to the body of the cell or divide into two, and one branch go to the cell-body and the other in another direction, to another neuron.

Dogiel says that fibrils, surrounded by a little cytoplasm, come into contact with the dendrites of adjacent cells and join the pericellular network or penetrate the cell ; they do not end freely, and they may pass without solution of continuity from one cell to another. In the cortex the processes of the cells gradually get finer until they consist of one fibril with a little cytoplasm ; this divides frequently, and forms a network with fibrils from other cells which have a similar function ; or it may pass into a process of another cell and establish a direct neurofibrillary anastomosis between two cells.

R. G. Rows.

PATHOLOGY.

HOW ARE THE PATHOLOGICAL CHANGES IN TABES PRO-

(2) DUCED? (Wie entstehen die pathologisch-anatomischen Veränderungen bei Tabes dorsalis.) A. HEYM (of Chicago), *Neurolog. Centralbl.*, Dec. 1, 1909, p. 1255.

THE author advances a theory to account for the anatomical changes met with in tabes, founds thereon what he believes to be the first step in a new therapy of the disease, and supports his view by reference to the results which he has obtained by its application.

Tabes, he argues, is due to a toxin which may reach the nervous tissues by the blood, lymph or cerebro-spinal fluid, and against which the nervous tissues possess a remarkable power of resistance. The cerebro-spinal fluid comes into very close relation with the intervertebral ganglia, as may be demonstrated by injecting a 2 per cent. solution of methylene blue into the subarachnoid space of dogs or rabbits. The trophic functions of the ganglion cells may be disturbed without any visible alteration in their structure. The posterior root is surrounded by cerebro-spinal fluid, hence the reason why the intra-spinal rather than the extra-

spinal portion of the neuron suffers. The greater length of the roots for the lower extremities may account for their more frequent involvement. The sensory divisions of the 5th, 9th, and 10th nerves are not uncommonly implicated, while the optic nerve, which is often affected, is bathed in cerebro-spinal fluid. The motor nuclei, both spinal and cerebral, commonly escape. A notable exception is met with, however, in the case of the ocular nerves, the nuclei of which are situated immediately underneath the ventricular endyma.

If this view be correct, the obvious therapeutic indication is to antagonise the toxin in the cerebro-spinal fluid, when improvement in the symptoms due to direct irritation by the toxin (*e.g.* the pains) ought to occur. The author has employed cacodylate of sodium, which is obtained in sterilised tubes each containing 0.05 of cacodyl. He has used the drug introduced into the vertebral canal in eleven cases of tabes and five of general paralysis. Seven of these patients suffered from characteristic attacks of shooting pains, and in all the pains have practically disappeared after three injections. In one case, in which the cacodyl appeared to act like a charm, three injections of a 1 per cent. methylene blue solution had proved quite ineffective. (It should be noted, with regard to these results, that at the time this paper was written the author had only five weeks' experience of the remedy.)

Heym believes that the treatment is particularly hopeful in early cases, but he points out that it will not prevent a fresh accumulation of toxin. It will be interesting to see whether these results are confirmed.

EDWIN BRAMWELL.

THE PATHOGENY OF TABETIC ARTHROPATHIES. GORDON

(3) (of Philadelphia), *Rev. Neur.*, Sept. 30, 1909, p. 1133.

FROM a detailed examination of the pathological material in two cases of tabetic arthropathy, the author concludes that the essential feature in the conditions is disease of the peripheral nerves, but that this by itself is insufficient to produce an arthropathy, traumatism in its widest sense being indispensable.

S. A. K. WILSON.

THE PATHOGENESIS OF PSEUDO-BULBAR PARALYSIS. (Die

(4) *Pathogenese der Pseudobulbärparalyse.*) A. JAKOB (of Strassburg), *Arch. f. Psych.*, Bd. 45, Ht. 3.

THE author in a communication of more than 100 pages discusses the whole question of pseudo-bulbar paralysis in a methodical and thorough manner. After a brief historical review he tabulates

115 cases from the literature, grouping them according to the anatomical seat of the lesion ; only cases in which there was an adequate microscopical examination are used. This collection of cases is followed by the detailed report of the clinical history and pathological anatomy of a personally observed case.

The casuistic part of the contribution is followed by a discussion of the pathogenesis of the disorder, which is introduced by anatomical-physiological considerations.

Pseudo-bulbar paralysis has its anatomical basis in the occurrence in both hemispheres of symmetrically situated foci which interrupt the projection fibres proceeding from the operculum to the bulbar nuclei. The seat of the focus is rarely purely cortical, usually in the white matter of the cerebrum and in the basal ganglia, with or without involvement of the cortex. The exact seat of the supranuclear involvement of the cortico-bulbar fibres is unimportant, and there is no reason for separating a cerebral from a cerebro-bulbar form (Oppenheim, Siemerling). The author considers as a mixed form those cases in which pseudo-bulbar symptoms occur along with nuclear symptoms. The bilateral representation of the glosso-labio-pharyngeal muscular apparatus prevents as a rule the occurrence of the syndrome with a unilateral lesion.

Where a unilateral lesion does cause pseudo-bulbar paralysis, we have to deal with the permanence of what is usually a transitory phenomenon, due to the diminished power of substitution of the central nervous system.

The pyramidal tracts are usually, but not always, affected. The clinical symptoms of the disorder are paretic-ataxic. The lesion of the paths which conduct voluntary motor discharges leads to the central disorder, the paralysis, which is the foundation of the ataxic element in the picture. The disproportion between the actual paralytic phenomena and the functional impairment is explained by the disorders of co-ordination. The disorders in the synergic movements of whole muscle-complexes are due to a partial interruption of neurone connections, which disturbs the general sensory-motor equilibrium.

The lesions of the basal ganglia must not be correlated too crudely with the clinical symptoms, but are probably of influence in destroying the balance necessary for the execution of fine movements. The disorders of co-ordination of the speech movements go hand in hand with a lesion of the cortico-cerebellar system, especially in its frontal part ; the cerebellum is probably of great importance in the co-ordination of speech movements.

C. MACFIE CAMPBELL.

ANATOMICAL LESIONS IN UNILATERAL LOSS OF THE

- (5) **KNEE JERK.** (Über den anatomischen Befund bei einseitigen Fehlen des Patellarreflexes—*Tabes irregularis*—Ein Beitrag zur Lokalisation des Patellarreflexes.) BERNHARD SCHLÜCHTERER, *Neurolog. Centralbl.*, Dec. 1, 1909, p. 1250.

THE case described is that of a man who presented symptoms of early tabes, and who died of an aneurism. The right knee jerk was well marked, while the left was usually absent, although at times a feeble response was obtained on this side after lumbar puncture, a point which has been previously noted by Pick and others. Excepting for a slight degree of chronic inflammation of the pia, the only pathological change met with in the spinal cord consisted in slight pallor in Westphal's root entry zone, more especially on the left side, and extending from the lower dorsal to the upper lumbar region. This change reached its maximum at the level of the second lumbar segment, the entering fibres being distinctly atrophic both in their extra- and intra-spinal course, while the grey matter of the posterior horn and of Clarke's column was distinctly rarified on the left side. Several instances of unilateral loss of the knee jerk with microscopic examination of the cord are referred to, although a case reported by the abstractor in this *Review* (Vol. i., 1903, p. 392) has escaped the writer's notice. The section figured appears to correspond more closely perhaps with the third than the second lumbar segment.

EDWIN BRAMWELL.

ON THE INFILTRATION OF THE CEREBRAL VESSELS IN

- (6) **GENERAL PARALYSIS.** (Über die Infiltration der Hirngefäße bei der progressiven Paralyse.) S. WEISS (of Freiburg), *Arch. f. Psych.*, Bd. 45, Ht. 1.

ON the basis of the examination of fourteen cases the author reaches the following conclusions:—1. The cellular infiltration of the cerebral vessels in general paralysis is more marked in the cortex than in the white matter. In the cortex the infiltrate is most marked in the middle layers. 2. In the majority of cases the central and frontal convolutions show the greatest, the occipital the least infiltrate. 3. No relation can be demonstrated between the extent and intensity of the infiltrate and the duration of the disorder. 4. There is, possibly, some relation between the attacks and the infiltrate. 5. Pigment is found in addition to cellular elements, except when the latter are scanty. It is most common in chronic cases, and has no relation to attacks.

C. MACFIE CAMPBELL.

DEVELOPMENTAL ANOMALIES OF THE BRAIN IN JUVENILE

- (7) **GENERAL PARALYSIS.** (*Entwicklungsstörungen des Gehirns bei juveniler Paralyse.*) A. TRAPET (of Bonn), *Arch. f. Psych.*, Bd. 45, Ht. 2.

THE author reports the history and anatomical findings in a case of juvenile general paralysis. Certain features pointed to developmental arrest—ectopia of Purkinje cells in the cerebellum, Purkinje cells with two nuclei, others joined as if in a syncytium. Such features are not uncommon in juvenile general paralysis, and probably depend upon the inherited syphilitic taint.

C. MACFIE CAMPBELL.

ON THE CAUSES OF DEATH AND OTHER PATHOLOGICAL-

- (8) **ANATOMICAL FINDINGS IN THE INSANE.** (*Über die Todesursachen und andere pathologisch-anatomische Befunde bei Geisteskranken.*) R. GANTER (of Wormditt), *Allg. Ztsch. f. Psych.*, Bd. 66, Ht. 3-4.

A STATISTICAL paper on the basis of 1017 post-mortem examinations. The majority of the patients died of pulmonary disorders, tuberculosis playing an important rôle. In dementia præcox, imbecility, and the presenile disorders the majority of deaths were due to tuberculosis, in general paralysis and epilepsy to attacks, in senile dementia to pneumonia.

C. MACFIE CAMPBELL.

ON THE PATHOLOGICAL ANATOMY OF CATATONIA.

- (9) (*Beiträge zur pathologischen Anatomie der Katatonie.*) R. MORIYASU (of Kiel), *Arch. f. Psych.*, Bd. 45, Ht. 2.

THE author reports briefly the clinical and pathological findings in nine cases of catatonia, and arrives at the following conclusions:—

1. In catatonia the neurofibrils in the cerebral cortex often become fragmented and diminish in number; the process is diffuse.
2. The changes in the nerve cells are also found in other psychoses.
3. The vascular changes are unimportant; the vessels are increased and thickened; there is a moderate amount of pigment on the vessel wall; mast-cells in the vessel wall.
4. The nuclei of the neuroglia proliferate around the vessels, especially in the medullary rays. Around the pyramidal cells there is a definite increase of satellite cells.
5. In the author's cases the cells in Clarke's column showed striking changes. The cells in the anterior cornua also showed changes.

C. MACFIE CAMPBELL.

THE PATHOLOGICAL ANATOMY OF THE THYROID GLAND

(10) **AND THE HYPOPHYSIS IN CERTAIN MENTAL AND NERVOUS DISEASES.** ZALLA, *L'Encéphale*, October 10, 1909, p. 286.

THE diseases were senile dementia, cerebral arterio-sclerosis, mental confusion, general paralysis, epilepsy, idiocy with or without epilepsy (total, 29). In practically every case the thyroid gland was abnormal, the common lesion being sclerosis. The hypophysis was much less affected.

S. A. K. WILSON.

A CONTRIBUTION TO THE PATHOLOGY OF NEURAL MUS-

(11) **ULAR ATROPHY.** (Beitrag zur Pathologie der neuralen Muskelatrophie.) GIERLICH (of Wiesbaden), *Arch. f. Psych.*, Bd. 45, Ht. 2.

THE onset of the symptoms was at the end of the first year, when the boy began to walk; gradually the dorsal flexors of both feet began to show weakness, retraction of the Achilles tendons ensued; temporary improvement in the gait resulted from tenotomy, but as the weakness developed the gait became worse. In the fourth year the small muscles of the hand became involved. The patellar reflexes were absent; sensibility, co-ordination pupillary reaction were satisfactory. The patient died at six after broncho-pneumonia.

The cord showed degeneration in the posterior columns; in the lumbar region the whole area was involved, with the exception of the dorso-ventral field; higher up the degeneration was almost confined to the columns of Goll; it was present as high as the level of the nucleus gracilis. There was a less marked degeneration in the postero-lateral part of the lateral columns, involving the pyramidal tract, the direct cerebellar tract, and the tract of Gowers. Clarke's column showed diminution of fibres and degeneration of the cells; Lissauer's marginal zone was intact. Other cell groups were also affected in certain regions of the cord. The anterior horns were as a rule intact. The muscles of the legs showed advanced atrophy with fatty degeneration; the nerves of the legs showed degeneration and diminution of nerve fibres, more marked peripherally.

C. MACFIE CAMPBELL.

PSYCHOLOGY.

BRAIN AND MIND. CHARLES MERCIER, *Lancet*, Nov. 13, 1909.

(12)

MIND is often spoken of as a "function" of the brain; but in a medical or physiological sense mind is not a function of the brain.

By the function of an organ we mean the physical effects of the activity of the organ. The reception, storage, and liberation of motion is a physical, not a mental, process. It is often supposed that there is one part of the brain for these purely physical and physiological functions, and another part in which mental operations go on. This cannot be so. The whole of the brain is constituted fundamentally alike. All parts have for their function the production of physical effects. Try to picture to yourself how the neurons of the brain can produce or contain a sound of high C; the aspect of a cathedral; a smell of putridity; an emotion of anger, or a stomach-ache. It is impossible. They are not in the brain. They are in the mind; and the mind is distinct and separate from all material things.

Yet the brain and the mind are inseparably bound up together. We know of no manifestation of mind except in animals with a nervous system. What is the connection between them?

Three hypotheses have been advanced to account for the connection. These hypotheses are dualism, monism, and the Leibnitzian hypotheses of parallelism, or pre-established harmony. For none of the three can any reason be adduced why it should be adopted rather than the others.

But although we cannot explain the connection between mind and brain, we can get the affair before our minds if we look upon mental processes as an epiphenomenon imposed on the material processes of the brain. When an impression is made on the body from without, either by material contact or in any other way, a nerve current is set up which flows from the part impressed to the brain. Hence, after much wandering, it issues at length as an efferent current to the muscles, and produces a bodily movement. The circle of causation is closed. But at the turning-point of the current occurs an epiphenomenon. Just as, in the electric circuit, the current flows completely round, but at the point of greatest resistance a new phenomenon appears in the shape of a glow of light, so in the nerve circuit the excess of resistance at one place is the condition of the appearance of an epiphenomenon, a mental change. The parallel is faulty, because in the electric circuit the epiphenomenon occurs at the expense of a portion of the energy, which disappears from the circuit; while in the case of the brain, we do not know that any portion of the energy is converted into mind; but the illustration is the nearest that the limitation of our faculties permits us to frame, and it is a real help in dispelling the notion that the production of mind is a function of brain, in any sense in which the term "function" is used in medicine.

H. DE MAINE ALEXANDER.

EXPERIMENTAL PSYCHOLOGY AND HYPNOTISM. GEORGE(13) H. SAVAGE, *Brit. Med. Journ.*, Oct. 23, 1909.

THIS subject was chosen by Dr Savage in delivering the Harveian Oration for the present year. Dr Savage described the treatment of the insane before and during Harvey's day, and referred particularly to the history of the Royal Bethlem Hospital. Up to the removal of Bethlem from the City to its present site in 1815, the public were still admitted to see the patients for a fee of 2d., and George Cruikshank studied and sketched there.

Experimental psychology has done two important things: it has shown us how to measure definitely the reactions of the senses to their surroundings, and it also has shown us how readily some of the senses may be deceived. It is only the possibility of giving physical expression to mental states which confers on general and experimental psychology the rank of science. This physical expression is obtained by observation of the subject and of his outward behaviour, and by the description of the subject's inner experience.

The so-called hypnotic influence exercised by placing a fowl with its beak on the ground and drawing a chalk-line from it was practised in Harvey's time by a Jesuit father.

It is quite certain that hypnotism can only have a limited use, and that its use is not among the actively insane.

If there is any danger in hypnotism it is only like any other useful remedy; no risk, no good. In highly neurotic people it may tend to the development of hallucinations of the senses. It is certain that some people develop delusions of persecution by studying spiritualism or occultism. Hypnotism, therefore, should be avoided in highly neurotic people.

Power is for use and abuse, and suggestion is for use and abuse—the physician to honour and the charlatan to dishonour suggestion.

During the hypnotic state it is impossible to influence a person to do what is absolutely alien to his training and inheritance. The acts performed during hypnosis are not recalled when awake, but are fully remembered on a second hypnosis.

The mode of hypnotism chiefly in vogue is post-hypnotic suggestion.

Nervous disorders that do not depend on organic brain disease, those mental disorders that are purely functional, and such as do not cross the insane border-line, may be benefited. The following disorders may be benefited by hypnotism;—sleeplessness, stammering, muscular and nervous tics, enuresis, chronic constipation, alcoholism, drug-taking, moral perversion, and mental obsessions.

H. DE MAINE ALEXANDER.

AN ATTEMPT TO DEFINE THE TERMS USED IN CONNEC-

(14) **TION WITH RIGHT-HANDEDNESS.** ERNEST JONES, *Psychol. Bull.*, 1909, p. 130.

MUCH confusion has arisen from the fact of terms made from the Latin root *dexter* having been used in different connotations by different writers. The various connotations are here discussed, and an attempt made to standardise them.

AUTHOR'S ABSTRACT.

CLINICAL NEUROLOGY.**ATROPHIC PARALYSIS OF THE MUSCLES OF BOTH HANDS**

(15) **AND FOREARMS: RECOVERY.** (Toxic Degeneration of the Lower Motor Neurons.) R. T. WILLIAMSON, *Lancet*, Nov. 13, 1909, p. 1423.

A WOMAN, aged 24, suffered from an acute illness, which was thought to be influenza. The severe symptoms subsided in a few days. The pains soon disappeared in the legs and trunk, but persisted in the arms. The pains were of a dull, aching character, and there was tenderness of the muscles. When the pains in the arms disappeared (at the end of three weeks) weakness of the hands and forearms was noted, and this steadily increased until there was marked paralysis. No evidence of lead poisoning or of other cause of the paralysis except the acute illness. When first examined (three months after the acute illness), there was complete paralysis of all the small muscles of the hands, with well-marked atrophy; paralysis of the extensors of the fingers and wrists, paresis of the flexors of the fingers and wrists; and slight affection of the flexors of the elbows. The muscles of the forearms were wasted, but to a less extent than the small muscles of the hands. There was muscular tenderness in the forearm muscles, but no anæsthesia. Legs not affected. After several weeks gradual improvement occurred in the forearm muscles, and in four months these muscles had recovered; but the small muscles of the hands remained paralysed and atrophied, and the hands presented the "claw-like" appearance (*main en griffe*). By the end of twelve months the atrophy of the hand muscles had gradually disappeared, but the action of these muscles was much impaired; and it was not until the end of eighteen months that all of the movements produced by the thenar and hypothenar muscles could be satisfactorily performed.

The differential diagnosis is discussed. The case is regarded as an instance of the affection first described by Stanley Barnes

as "toxic degeneration of the lower motor neurons." Three similar cases have been observed by the author, one of which has been recorded.

AUTHOR'S ABSTRACT.

ETIOLOGY OF EPIDEMIC INFANTILE PARALYSIS. (Unter-

(16) suchungen zur Aetiologie der epidemischen Kinderlähmung.)

PAUL H. RÖMER, *Münch. med. Woch.*, Dec. 7, 1909, S. 2505.

THIS important work of Professor Römer's takes us one step onwards in the etiology of poliomyelitis. In the recent epidemic in Marburg sore throats were so common that he began cultural experiments from the tonsils and pharynx, but no clue to the existing agent of the disease was found there. Bacteriological investigation of the cerebro-spinal fluid and of the brain and cord also proved negative. The results of injecting intra-cerebrally (and intra-peritoneally) cerebro-spinal fluid into rabbits, mice, and guinea-pigs were fruitless, and so were the injections of emulsion of brain and cord from an affected case in those animals. But a monkey treated in the same way (intra-cerebral injection of emulsion of poliomyelitic brain and cord) eight days afterwards developed typical poliomyelitis. It died of the disease; emulsions of its cord were injected intra-cerebrally into rabbits, but without result, but in another monkey completely typical poliomyelitis developed. The brain and cord substance and cerebro-spinal fluid from these monkeys was sterile so far as ordinary bacterial culture methods went. Poliomyelitis is therefore in all probability due to some living virus which is present in the brain and cord and can be cultivated *in vivo* in monkeys; but the organism, whatever it is, does not belong to the group of readily stained and easily cultivated bacteria.

J. H. HARVEY PIRIE.

UNUSUAL FREQUENCY OF POLIOMYELITIS IN FRANCE LAST

(17) SUMMER. ITS IDENTITY WITH CASES OBSERVED ABROAD IN AN EPIDEMIC FORM. THE RELATION OF POLIOMYELITIS TO EPIDEMIC CEREBRO-SPINAL MENINGITIS. (Fréquence insolite des poliomyélites en France pendant l'été dernier. Leur identité avec les cas observés à l'étranger sous forme épidémique. Relations entre la poliomyélite et la méningite cérébro-spinale épidémique.) A. NETTER, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, xxviii., 1909, p. 515.

AFTER discussing the pathology, symptoms, and epidemiology of epidemic poliomyelitis, Netter records six cases which have come under his notice in the course of the last summer. Their ages ranged

from 2½ to 9½ years. In one girl, aged 7, who died on the seventh day, microscopical examination of the cord revealed interstitial meningo-myelitis, especially affecting the anterior cornua. In another patient, in whom the disease resembled Landry's paralysis, recovery took place, with paralysis and atrophy of the left lower limb. In three cases there was marked nuchal rigidity in the initial stage, together with severe pain and paralysis of the sphincters.

In a case admitted to hospital with the diagnosis of cerebro-spinal meningitis the onset was also characterised by meningeal symptoms. The paralysis of the lower limbs was of short duration, disappeared without atrophy, and was accompanied by violent pains along the course of the nerves. In this instance there appeared to be polyneuritis or radiculitis rather than poliomyelitis. In the fifth case paralysis of the limbs was associated with facial paralysis and nystagmus. In the sixth case right hemiplegia and aphasia occurred on the third day, and was followed by ataxia of the lower limbs in convalescence.

In three cases lumbar puncture was performed. In the fatal case clear fluid containing a small number of lymphocytes was obtained on the fifth day. In the second patient, who was also punctured on the fifth day, the fluid was under hypertension, but was clear and contained little albumin, and no microbes nor cells. In the third patient slightly turbid fluid was removed on the second day, showing numerous polymorphonuclears and organisms resembling meningococci.

Though bacteriology does not allow us to accept the theory of an identical origin for epidemic poliomyelitis and epidemic cerebro-spinal meningitis, certain arguments in favour of this identity have been adduced, among which are the frequent affection of the pia and occurrence of sequelæ indicating involvement of the higher nerve centres in poliomyelitis. Even the character of the cerebro-spinal fluid is not decisive. Netter has frequently shown (*v. Review*, 1909, p. 606) that though the fluid in epidemic cerebro-spinal meningitis is usually turbid and rich in polymorphonuclears, it may sometimes be clear and contain lymphocytes only.

It is further to be noted that epidemics of poliomyelitis usually bear a chronological relation to epidemics of cerebro-spinal meningitis. This has been exemplified not only in France, but also in the United States, Holland, and Scandinavia, where there has recently been a co-existence of the two epidemics.

J. D. ROLLESTON.

THE 1908 EPIDEMIC OF POLIOMYELITIS IN VIENNA AND

(18) **LOWER AUSTRIA.** (Die Epidemie der Heine-Medin'schen Krankheit (Poliomyelitis) von 1908 in Wien und Niederösterreich.) J. ZAPPERT, *Wien. med. Woch.*, Nov. 13, 1909, S. 2683.

THIS epidemic began in July, reached its height in September-October, and had almost died out by January of this year. Data of 266 cases were available for this communication. Boys were more affected than girls in the proportion of 1·34 to 1. Poverty and density of population had apparently very little influence on the distribution. Of Wickmann's eight types the pure spinal form was by far the most common, 241 cases having well-marked spinal symptoms. A prodromal stage of one to three days' duration was common. Fourteen cases were of the type of Landry's paralysis; they were mostly in rather older children or in young adults, and were all fatal from involvement of the respiratory centres. Pontine and bulbar symptoms were frequently seen in early stages of the disease, generally associated with spinal symptoms. The encephalitic form was very rare. The ataxic type of Wickmann was not seen at all, although ataxia might be present in combination with pontine and bulbar symptoms. The polyneuritic type was also lacking, but mild meningitic and abortive types of the disease certainly occurred.

There was no doubt of the infective character of the disease in a good many instances.

J. H. HARVEY PIRIE.

A CONTRIBUTION REGARDING THE EPIDEMIC OF ACUTE IN-

(19) **PANTILE PARALYSIS IN WESTPHALIA.** (Zur Kenntniss der Westfälischen Epidemie von acute Kinderlähmung.) PAUL KRAUSE (of Bonn), *Deutsche med. Wchn.*, Oct. 21, 1909, p. 1822.

THE literature of previous epidemics is concisely reviewed. The present paper deals with one hundred cases, with nine post-mortems observed, in Hagen and its vicinity since the beginning of June. Two stages characterised respectively by general symptoms and paralysis may be recognised. Gastro-intestinal symptoms were observed in about 90 per cent. at the commencement, while with a single exception fever and heavy sweating were noticed. Other members of the household were in several instances simultaneously affected. Meningitic symptoms were prominent in two cases. The cerebro-spinal fluid was always obtained under pressure, reaching 135 and 140 in two cases, while the cell content was small and consisted almost exclusively of lymphocytes.

A localised meningitis, slight in degree but visible to the

naked eye, was present in all the cases examined post-mortem, while without exception the mucous membrane of the whole intestine and particularly the Peyers' patches and follicles were red and swollen. The mesenteric glands were enlarged in all cases, and there was a moderate degree of enlargement of the spleen.

The cases were confined to certain parts of the town, and in several instances it was quite certain that the infection was carried by a healthy person. Some further suggestive remarks in relation to etiology are of interest. Concluding that the disease is an infective process, and from his own observations that the active agent obtains entrance by way of the alimentary canal, the author discusses the possibility of infection through articles of diet. It is noteworthy in this connection that a considerable proportion of patients affected were children at the breast. It is interesting to note that there was a great mortality at the same time among the chickens at Hasper, a place in which more than twenty cases were observed. A similar observation has been made in Sweden. Another observation made by the author was that several isolated houses in which cases were observed were surrounded by oak trees, the young shoots of which were covered with a white fungus. On inquiry, he ascertained from Professor Stahl in Jena that this disease of the young oak shoots has only existed in Germany for a short time, perhaps only since last year.

Acute epidemic paralysis of children is suggested as a more appropriate title than that in common use.

EDWIN BRAMWELL.

DISEASE OF THE SPINAL CORD AND PSYCHOSIS IN PER-

(20) **NICIOUS ANÆMIA.** (*Rückenmarkserkrankung und Psychose bei perniziöser Anämie.*) E. SIEMERLING (of Kiel), *Arch. f. Psych.*, Bd. 45, Ht. 2.

THE case of an alcoholic and syphilitic innkeeper, the son of a tabetic. At the age of thirty-four he became quiet, and four years later was fatigued and sleepy, appeared yellow, had a peculiar feeling at the finger-tips. July 1904: tumour of the spleen, œdema of the legs and eyelids; the patient was sullen and depressed, and later stuporous. The gait was uncertain; the deep reflexes increased. The blood showed the characteristic changes of pernicious anæmia. Weakness in the upper extremities became more marked; sign of Babinski on both sides. Impairment of sense of touch and pain in the lower extremities. The patient complained of poison in the hands, gas in the body, and other annoyances. He died in October 1904.

On microscopical examination there were found foci of myelitis in the various columns of the cord.

The author admits that the relation of the psychosis to the spinal disorder is obscure, and refers to various recorded cases in which pernicious anæmia has been complicated by mental disorder. A full bibliography is appended. C. MACFIE CAMPBELL.

ON INTERMITTENT CLAUDICATION. DAVID M. GREIG, *Practitioner*, Nov. 1909.

MR D. M. GREIG, in the November number of the *Practitioner*, has a paper on "Intermittent Claudication, with a Report of a Case due to Venous, not Arterial, Affection, followed by Recovery." The case was that of a man, æt. 72, who, after an attack of diarrhœa, developed a femoral thrombosis, complicated with a pulmonary embolism, and followed later by pain in the opposite lower extremity, which gradually localised itself in an ilio-psoas affection. This latter was accompanied with all the symptoms of intermittent claudication. The pain came on only during exertion, increased in proportion to the exertion, and was relieved immediately by rest. The maximum of affection was reached rapidly, but under rest and treatment gradually diminished, till within two and a half years the normal condition was regained. At no time was there any absence of pulsation in any of the pedal arteries, and there was no evidence of arterio-sclerosis. The author argues that the obvious venous affection in the opposite femoral and in the lung, the absence of any evidence of arterial disease, and the gradual complete recovery, support the theory that the claudication of the ilio-psoas muscle was due to extension of the clot up one side of the inferior cava, involving the venous return from the affected muscle by involvement of the openings of the lumbar veins into the large venous trunk. He points out that both Erb and Bramwell have reported cases of typical intermittent claudication throughout which there remained normal arteries with normal pulsation, and he suggests that a more careful pathological examination of the veins in the post-mortem investigation of such cases would disclose that intermittent claudication was due, not entirely to deficient arterial blood supply, but in association or in dissociation with defective venous blood removal.

AUTHOR'S ABSTRACT.

INFLUENZAL MENINGITIS. D. J. DAVIS, *Arch. of Intern. Med.*, (22) Oct. 15, 1909, p. 323.

INFLUENZAL meningitis is a disease of infants and young children, and is extremely rare in adults. Over one-half the reported cases occurred in children under one year. The present case is the youngest on record.

Twin brothers fell ill five days after birth. Both cases ran an identical clinical course, and ended fatally on the ninth and eleventh days respectively after birth. The symptoms were those of enteritis, and there was little or no evidence of meningeal involvement. An autopsy was performed on the first child only, and revealed acute purulent lepto-meningitis and acute enteritis. Pure cultures of *B. influenzae* were obtained from the meningeal exudate and the peritoneal fluid. The source of infection could not be determined. Though no autopsy was performed on the second child, it was probable that he was suffering from the same infection.

J. D. ROLLESTON.

CEREBRO-SPINAL MENINGITIS DUE TO AN UNDETERMINED

- (23) **DIPLOCOCCUS ASSOCIATED WITH PARATYPHOID B. SEPTICÆMIA.** (Méningite cérébro-spinale à diplococque de nature indéterminée, contemporaine d'une bactériémie à paratyphoïde B.) SALEBERT and LOUIS, *Progrès méd.*, 1909, p. 567.

DURING a severe epidemic of meningococcal cerebro-spinal meningitis at Rennes a soldier fell ill with meningeal symptoms. Lumbar puncture performed on the fifth day gave issue to a clear fluid, which, in addition to a few lymphocytes, contained endothelial cells filled with diplococci morphologically resembling meningococci. The organisms, however, could not be cultivated, and Vincent's reaction and examination of the naso-pharyngeal mucus proved negative. Blood from the cephalic vein yielded a culture of the paratyphoid B. bacillus, and the patient's serum rapidly agglutinated a laboratory specimen of these bacilli. A second lumbar puncture performed on the sixth day showed clear fluid, in which the endothelial cells were absent and the lymphocytes were fewer than before. Treatment consisted in the injection of 20 c.c. of serum and the administration of hot baths. By the twentieth day all the meningeal symptoms had disappeared.

J. D. ROLLESTON.

SEVERE CEREBRO-SPINAL MENINGITIS TREATED BY INTRA-

- (24) **SPINAL INJECTIONS OF 480 C.C. OF DOPTER'S SERUM. RECOVERY WITH STRABISMUS AND MUSCULO-SPIRAL PARALYSIS.** (Méningite cérébro-spinale grave, traitée par des injections intra-rachidiennes de 480 centimètres cubes de sérum de Doppter. Guérison avec strabisme et paralysie radiale.) LAIGNEL-LAVASTINE and P. BAUFLE, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, xxviii., 1909, p. 445.

AN interesting feature in this case, not mentioned in the title, was a polyuria which developed on the eleventh day of disease. This

was not a critical phenomenon, for it was not accompanied by an improvement in the general condition. It was probably of bulbar origin, as it was associated with irregularity of the pulse.

J. D. ROLLESTON.

**THE PRESENT STATUS OF THE SERUMTHERAPY OF
(25) EPIDEMIC CEREBRO-SPINAL MENINGITIS.** SIMON
FLEXNER, *Journ. Amer. Med. Assoc.*, lxiii., 1909, p. 1443.

FLEXNER has tabulated the results obtained by the employment of his serum in Europe and America in 712 cases of epidemic cerebro-spinal meningitis. The highest mortality occurred during the first two years of life, but this was only 42·3 per cent., as compared with 90 per cent. under other forms of treatment. The mortality of the age period, 2-5 years, was 26·7 per cent., and the lowest mortality, 15·9 per cent., was met with between 5 and 10 years. The average mortality in all the age periods was 31·4 per cent. The importance of early injection is shown by the fact that the mortality in the first to third day period was 25·3 per cent.; in the fourth to seventh day period, 27·8 per cent.; and in the period later to the seventh day, 42·1 per cent.

J. D. ROLLESTON.

**CLEAR CEREBRO-SPINAL FLUID IN CEREBRO-SPINAL
(26) MENINGITIS.** (Liquide céphalo-rachidien limpide au cours
des méningites cérébro-spinales.) A. NETTER and R. DEBRÉ,
C. R. de la Soc. de Biol., lxvii., 1909, p. 252.

In two previous papers the writers had described the clear fluid obtained during the first twenty-four hours, or at a late period of epidemic cerebro-spinal meningitis (v. *Review*, 1909, p. 606). In these cases meningococci were present in the fluid. In the present communication the writers describe an absolutely clear fluid free from micro-organisms, and only differing from the normal by the presence of a larger quantity of serum. Such fluid may be found in some attenuated or abortive attacks of cerebro-spinal fever. An illustrative case is recorded in which the meningococcic nature of the disease was established by the blood agglutinating meningococci.

J. D. ROLLESTON.

**THE BORDET-GENGOU FIXATION REACTION IN THE
(27) DIAGNOSIS OF CEREBRO-SPINAL MENINGITIS.** (De
l'emploi de la réaction de fixation de Bordet-Gengou pour le
diagnostic de la méningite cérébro-spinale.) COHEN, *Presse
Méd.*, 1909, p. 791.

COHEN in 1906 drew attention to the value of this reaction in the diagnosis of cerebro-spinal meningitis. By this means he had

been able to make the retrospective diagnosis of cerebro-spinal meningitis in (1) an abortive case from which the meningococcus had disappeared; (2) a case of cerebro-spinal meningitis complicated by tuberculous meningitis; (3) a case of panophthalmitis which had shown meningeal symptoms a few weeks previously. He now records a case in a boy, aged 13, admitted to hospital with meningeal symptoms. Turbid cerebro-spinal fluid was removed under pressure, and contained an excess of polymorphonuclears, but no microbes. The fixation reaction showed the presence of an antimeningococcic complement, thus indicating the recent occurrence of meningococcic infection.

J. D. ROLLESTON.

EVOLUTION OF HÆMOLYSINS IN TWO CASES OF MENINGEAL

(28) **HÆMORRHAGE.** (*Evolution des hémolysines dans deux cas d'hémorragie méningée.*) G. GUILLAIN and G. LAROCHE, *C. R. de la Soc. de Biol.*, lxxvii., 1909, p. 461.

THE examination was made in two cases of traumatic meningeal hæmorrhage which recovered. The hæmolysins were found at first in both the cerebro-spinal fluid and the blood serum; subsequently they disappeared from the cerebro-spinal fluid while persisting in the blood serum, and finally they disappeared from the blood serum. In the one case they were present fifteen days in the cerebro-spinal fluid, and in the other case five days; in the blood serum they were found for several weeks. It is thus shown that the human organism reacts to its own hæmorrhage by the creation of antibodies, which are analogous to those produced by the injection of toxins into animals.

J. D. ROLLESTON.

ALTERATION IN THE COLOUR FIELDS IN CASES OF BRAIN

(29) **TUMOUR.** JAMES BORDLEY, Jr., and HARVEY CUSHING, *Arch. of Ophthal.*, Vol. xxxviii., No. 5, 1909, p. 451.

AMONG two hundred and fifty patients with brain tumour, the authors have selected fifty-six with reference to alterations in the colour fields. In this series a special effort was made to eliminate any possible source of error on the part of the patient or observer. The main conclusion come to is that the two conditions emphasised as being distinctly pathognomonic of hysteria, namely, the concentric contraction of the field for form with partial or complete colour-reversal, and the circumstance that the red field may encircle the blue, are both alterations which are commonly met with in brain tumour. The circumstance that a concentric contraction with colour-reversal has speedily returned to the normal state of affairs after relief of the pressure symptoms by operation

"suffices to controvert the view of their being hysterical." The prominent feature in most of their charts, a number of which illustrate this paper, is not so much the preservation of the red field as the alteration in the blue. Blue blindness was present in several cases, while scotomata for blue and for no other colours were observed in certain cases apparently as the initial stage in the former condition. In one instance, soon after hemia-chromatopsia was established the visual acuity of the corresponding area gradually decreased as the form outline slowly moved in towards the middle line. The chief conclusions arrived at are: (1) The fact that in many of the charts the fields for form are unchanged, while there is a very definite change in the fields for colour. Fifty out of the fifty-six cases show colour changes; only eighteen show definite form changes. (2) In four of the cases in which the colours interlaced, tumours were found, though there was no choked disc. (3) In forty-one out of forty-two cases examined subsequent to operation, whether palliative or radical, the colours became restored to their normal relative position.

EDWIN BRAMWELL.

ANGIOSARCOMA OF THE LEFT HEMISPHERE. C. E. RIGGS,
(30) *Journ. of Nerv. and Ment. Dis.*, Nov. 1909, p. 667.

THE patient was a woman; the age is not mentioned. She had double optic neuritis and right hemiplegia. She died two days after having been operated on. A short account is given of the morbid anatomy of the tumour.

ERNEST JONES.

**EMBOLISM OF THE LEFT POSTERIOR INFERIOR CERE-
(31) BELLAR ARTERY.** MEYER, *Neur. Centralbl.*, Nov. 16, 1909,
p. 1210.

THIS is a fairly typical instance of a rare but remarkably definite and easily recognisable medullary syndrome. In the present case there were:—

(a) On the side of the lesion:

Paralysis of left palate and left vocal cord, paralysis of left half of tongue (the eleventh was normal); cervical sympathetic palsy of the left eye; sensibility on the left face, however, was intact (the left corneal reflex was feebler than the right); left-sided (and partly right) cerebellar ataxia, which was, however, very transient; nystagmus.

(b) On the opposite side of the body:

Marked thermanæsthesia and analgesia over the right face, right arm, and right body as far as the nipple; touch and muscular sense preserved. Patellar and ankle

clonus on both sides, but no extensor responses, and no sign of involvement of the pyramidal tracts.

It will be seen that the case is fairly though not entirely typical; variations in the clinical picture are, of course, to be expected. There is no reference to the American cases of Spiller and Thomas, or to the case reported by the reviewer in the *Proceedings of the Royal Society of Medicine of London*, February 1909.

S. A. K. WILSON.

**THE HYPOPHYSIS CEREBRI. CLINICAL ASPECTS OF HYPER-
(32) PITUITARISM AND OF HYPOPITUITARISM. HARVEY**

CUSHING, *Journ. of Amer. Med. Assoc.*, July 24, 1909.

CUSHING adopts, in this most interesting and suggestive paper, the nomenclature of Herring, who describes the pituitary gland as consisting of three parts—the pars anterior or epithelial portion, the pars nervosa or infundibular part, and the pars media, which consists of the epithelial investment of the pars nervosa with its upward extension on to the walls of the infundibular stalk. A very definite cleft separates the pars anterior from the pars media and pars nervosa, so that for anatomical and surgical purposes the gland may be described as consisting of two lobes.

The effects of oversecretion and diminished secretion are discussed firstly from the standpoint of the physiologist.

Data relating to hypersecretion are only obtainable from the results of administration of the gland or an extract of the same either by the mouth or subcutaneously. Transplantation of additional glands from other animals have so far failed. The posterior lobe has been proved by Howell to contain a blood-pressure-raising principle; Schaefer has shown that an extract or emulsion of this lobe produces a pronounced diuretic effect, while Crowe has proved that continuous injections of this extract may produce an actual fall of blood pressure which may even be fatal. The only symptom which the author has observed to result from continued injections of an extract of the anterior lobe has been a definite loss of weight. Since most of the available preparations of the gland contain the extracts of both lobes, the possibility of injury from excessive posterior lobe administration should be kept in view.

The physiological effects of diminished secretion can only be arrived at by partial or complete hypophysectomy. The author, in conjunction with Drs Redford, Crowe and Homans, has performed more than a hundred total or partial excisions upon dogs. He concludes that the pituitary is essential for the maintenance of life, the animal developing a definite train of symptoms and dying within a few days or weeks after the operation of complete

excision. With the exception of some sexual disturbances no symptoms follow ablation of the posterior lobe. On the other hand, partial removal of the anterior lobe results in an increased deposition of fat, associated in some cases with polyuria and transient glycosuria, with shedding of hair, occasionally with unmistakable lessening of the sexual activities, and even with atrophy of the testes and ovaries. After hypophysectomy the author has found changes in other glands, and, among others, a hypertrophy of the thyroid. It is possible, in his opinion, that the adiposity which follows partial hypophysectomy may be related to secondary lesions in the ovaries and testes, and the glycosuria to alterations in the islands of Langerhans or thyroid.

The facts derived from clinical observation are next discussed. Acromegaly is usually associated with pituitary enlargement. There are, however, numerous cases on record in which a tumour of the pituitary found post-mortem was unaccompanied by symptoms of this disease, while cases of acromegaly have been reported in which the pituitary presented a normal appearance. These apparently contrary observations demand explanation in support of the view that acromegaly is due to a pituitary hypersecretion. Two cases which, in the author's opinion, are fairly conclusive, are quoted. The first was a case in which Hochenegg successfully removed the whole pituitary from a patient with acromegaly, a measurable diminution of the bony overgrowth being subsequently observed. The second was that of a patient suffering from the same disease, on whom Cushing performed a partial hypophysectomy. The gland presented the appearances of simple hypertrophy. The size of the hands subsequently showed a measurable reduction. The generally accepted view that the pituitary enlargement which leads to acromegaly results in giantism if the individual be affected before he reaches full development may be mentioned in passing.

Pituitary hyposecretion is next discussed. Cushing refers to the clinical condition described by Fröhlich as dystrophia adiposogenitalis, which, as he remarks, has received little recognition in English and American writings. The condition is characterised by small stature, infantile genitalia, hypotrichosis and an excessive deposit of fat, in addition to the local pressure symptoms of a growth in the region of the pituitary. Cushing is of opinion that in these cases the pressure from the tumour has led to a considerable lessening of the normal glandular activity, and he compares the symptoms with those observed in dogs after hypophysectomy. Cases presenting the above-described symptoms have been operated on by von Eiselsberg with pronounced lessening of fat and rapid appearance of sexual adolescence after the operation. Cushing states that he is unaware that this result was ascribed to re-awakening of the functional activity of the pituitary, which had

been previously compressed, or that special care was taken to avoid its removal with the tumour. He further points out that in the cases described by Fröhlich, in which he (Cushing) believes the symptoms are due to a pituitary hyposecretion, the patients had not reached adolescence, and remarks that it is quite possible that in the adult a different series of symptoms might result. "Whether the adiposis dolorosa of Dercum is akin to hypophyseal adiposis is not assured, though there are many features which lend support to such a conjecture."

That histological alterations in the structure of the pituitary are frequent is the conclusion which Cushing arrives at from the examination of the gland in over a hundred cases taken at random from the post-mortem room. It may be, therefore, that symptoms due to disturbance of the secretion of the gland occur in many diseases, and pass unrecognised. Possibly, for instance, the marked increase of weight, amenorrhœa and somnolence, not infrequently seen in association with cerebral tumours, are to be so explained. To quote the writer's own words: "There is every reason to suppose that functional irregularities of the hypophysis are at least as common as those of the thyroid gland, though heretofore only when a local neoplasm has clearly pointed the way to the hypophyseal regions have the symptoms due to these irregularities been given the attention they deserve." Cushing particularly indicates that the subdivision which he has drawn must be taken merely as a suggestion for a working basis.

As regards treatment in these various conditions, anterior lobe administration is indicated in hypopituitarism. In cases belonging to the group described by Fröhlich, operation may be demanded not on account of hypopituitarism, which may be medically controlled, but because of the direct symptoms produced by the tumour. In many of these cases the tumour is benign. Within recent years this operation of hypophysectomy has, as is well known, been carried out successfully in man. Cushing has found that in cases of pituitary tumour the usual decompressive operation does not relieve the headache, a fact which he explains by the circumstance that the headache is due to distension of the dural pocket which surrounds the gland. Hypopituitarism may be treated by partial excision of the anterior lobe, and subsequent administration of an extract of this portion of the gland.

EDWIN BRAMWELL.

REMARKS ON THE HYPOPHYSIS CEREBRI, INCLUDING A
(33) CONSIDERATION OF ITS TUMOURS, WITH REPORT
OF A CASE. D'ORSAY HECHT, *Journ. of Nerv. and Ment.*
Dis., Nov. 1909, p. 641.

A SHORT account of a case of teratoma of the hypophysis is given. The patient was a girl of 11, and no localising symptoms were present. Death took place six days after operation. A useful general review of the literature of the subject is added.

ERNEST JONES.

A CASE OF ADENOMA OF THE PITUITARY. (Struma
(34) adenomatosa dell' ipofisi.) ORESTE SANDRI, *Riv. di Patol.*
nerv. e ment., Vol. xiv. f. 7, 1909.

THE case recorded is one of a woman of 48, who for nearly seven years before she came under observation had suffered from progressive impairment of vision.

For about a year before admission to the hospital she had showed signs of progressive impairment of the intellect, and passed all her time in bed, rarely speaking or attending to what went on about her. This condition passed into a state of drowsiness, from which the patient only aroused herself to perform the necessary functions of a vegetative existence. When admitted into the hospital there was practically no vision. The optic discs showed bilateral white atrophy, but the author does not say whether this was primary or secondary in character. No other cranial nerve disturbance beyond some olfactory impairment was noted, and the muscular and sensory systems showed no signs of pathological change. She died from an attack of acute gastroenteritis. The autopsy revealed an enormous adenoma of the pituitary body.

The case was considered remarkable from the entire absence of other symptoms beyond the amaurosis and somnolence. There was no acromegalic change.

F. GOLLA.

DIAGNOSIS OF TUMOURS OF THE PINEAL GLAND. (Ueber
(35) Diagnose der Zirbeldrüsentumoren.) L. V. FRANKL-HOCHWART,
Deutsche Ztschr. f. Nervenheilk., 1909, Bd. 37, p. 455.

THE patient was a boy of 5½, whose father and two paternal uncles each had a persistent branchial cleft; a sister had a hæmangioma in one labium; a younger brother had a nævus on the right leg. When three years old, patient began to grow with excessive rapidity, and mentally seemed philosophic beyond his years. About five months before death strabismus appeared, first the right and then the left external rectus being affected. The ophthalmoplegia

became more marked as time went on. Double optic neuritis and violent headache supervened. About four weeks before death the penis was observed to be abnormally large. Pubic hairs appeared, erections occurred, and the voice became deeper. The visual fields were concentrically contracted, the temporal half of the right field being specially diminished. There was no paralysis of limbs nor any abnormality of reflexes. The child died of intercurrent scarlatina. At the autopsy there was a teratoma of the pineal gland about the size of a walnut. The Sylvian aqueduct was compressed, and the third and lateral ventricles were distinctly dilated. The sella turcica was not enlarged. The pineal tissue, present on the under surface of the growth, was normal on microscopic examination.

The writer, after comparing four other cases from the literature, considers the following syndrome as suggestive of pineal teratoma:—General symptoms of intracranial growth in a boy, together with sign of disease of the corpus quadrigemina (ophthalmoplegia, ataxia, etc.), abnormal growth of the body, excessive growth of pubic hair, obesity, drowsiness, premature genital and sexual development, mental precocity. The absence of acromegalic symptoms and the excessive genital development distinguish it from hypophyseal growth, also the radiographic examination of the sella turcica.

PURVES STEWART.

CONTRIBUTION TO APOPLECTIC BULBAR PARALYSIS. (Zur (36) *kasuistik der apoplektiform Bulbärparalyse—Embolie der Art cerebell. post. inf. sin.*). RICHARD MEYER, *Neurolog. Centralbl.*, Nov. 16, 1909, p. 1210.

THE symptoms in this case (unconfirmed by post-mortem) resembled closely those met with in cases recorded by Wallenberg, Oppenheim, and others, in which the above-mentioned lesion was present.

EDWIN BRAMWELL.

THE ÆTIOLOGY OF CONGENITAL WORD-BLINDNESS. (37) W. J. RUTHERFORD, *Brit. Journ. of Children's Dis.*, Nov. 1909, p. 484.

RUTHERFORD describes a typical case of congenital word-blindness in a girl of ten. The special interest of the case lies in the family history, which the author has investigated with great care. The child and a younger sister of six (who can read fairly well) are the youngest of a family of five children, all illegitimate, of whom the first three died in infancy. The parents and grandparents are quite illiterate, and the mother is also illegitimate. The maternal great-grandmother had fifteen children, of whom three appear to have been still-born. Of these fifteen, the eldest died in childhood,

another is the father of a diabetic son, while another is an inspector of police. The youngest is a confirmed alcoholic, and weak-minded. He it is who is the father of the girl who has word-blindness. In other words, he is her mother's uncle.

There is thus, in this case, a very defective heredity, and the author regards the family history as indicating that the condition is "of the nature of a reversion to the pre-civilised type, as the result of loss or destruction of the later and more highly specialised determinants in the gametic idioplasm, and as such it falls in line with many other of the phenomena of atavism."

W. B. DRUMMOND.

TWO CASES OF HEMIANÆSTHESIA WITHOUT DISORDER OF

(38) **MOTILITY.** (Zwei Fälle von Hemianästhesie ohne Motilitätsstörung.) W. v. STAUFFENBERG (of Munich), *Arch. f. Psych.*, Bd. 45, Ht. 2.

THE report of two cases, with a detailed discussion of the question of localisation, and reference to similar cases already published; a bibliography of ninety-four references.

C. MACFIE CAMPBELL.

CONSCIOUS EPILEPSY. PIERCE CLARK, *Amer. Journ. of Insanity*, (39) Oct. 1909, p. 295.

THREE cases of this kind are described. Clark considers that "those cases of epilepsy in which consciousness can be fully proven to persist in the attacks are either minor epilepsy, petit mal epilepsy, epileptoid states or psychomotor equivalents, partial or abortive epilepsy of organic or non-organic origin, or not epilepsy at all, but one of the many protean types of grand hysteria." The reviewer might add that it may be gravely doubted whether two of the cases here described are not cases of hysteria.

ERNEST JONES.

THE MENTAL SYMPTOMS IN CASES OF EXOPHTHALMIC

(40) **GOITRE AND THEIR TREATMENT.** JOHN R. GILMOUR, *Journ. Ment. Sc.*, Oct. 1909.

AN account of seven cases of exophthalmic goitre with mental symptoms, four of which recovered after suitable treatment of the physical condition. The author calls attention to the fact that the mental changes may be present before the cardiac or ocular changes have been established and before the changes in the thyroid have been observed. He considers that a certifiable

mental state in exophthalmic goitre cannot be as uncommon as it would appear from the writings of Professor Murray and Dr Hector Mackenzie, as out of 750 patients who were admitted during six years to Scalebor Park suffering from different types of mental disease, five were cases of this nature. The cases under consideration nearly all had neuropathic or psychopathic histories, and he considers that the insanity is a furtive development of the neurasthenic and hysterical conditions observed even in the mildest form of Graves' Disease. Melancholia and confusional states appear to be the most common types of mental disease, but the writer considers his experience too limited for any definite statement to be made on this point. He regards the prognosis as hopeful, and considers that it depends upon the course of the exophthalmic goitre and not on the type of mental illness. He considers that when the thyroid shows signs of variation and activity the outlook is more favourable than in cases where atrophic or fibrotic changes have taken place. In regard to treatment, rest in bed in the open air is of the greatest importance. Modified exercise improves the sleep, so as soon as the pulse rate becomes uniform and falls below 90 the patients should be up for some hours each day. The drugs which are most useful are the salicylates. If pyrexia be present quinine is indicated, and in the chronic cases the bromides with or without belladonna. The cardiac tonics have little effect in reducing the pulse rate. The specific treatment by means of thyroidectomy, rodagen and the Mœbius antithyroid serum has lately been introduced. He considers this treatment of great use in cases which resist the ordinary drugs, and favours the use of milk from thyroidless animals in preference to dried serum and corpuscles. Suggests thyroidectomy with a view to permanent results where there are signs of activity in the gland.

RAE GIBSON.

ANALYSIS OF THE PSYCHOSES ASSOCIATED WITH GRAVES'

(41) **DISEASE.** PACKARD, *Amer. Journ. of Insanity*, Oct. 1909, p. 189.

EIGHTY-TWO cases of this nature were analysed, twenty being in men. A table is given showing the incidence of the various features—delirium, phobia, etc. Packard regards Graves' disease as an "exciting rather than as a fundamental cause of the psychoses; the psychoses themselves are not essentially different from the ordinary recognised functional psychoses, except as modified by the prominence of those symptoms seen to a lesser degree in the sane with Graves' disease. The prognosis is, on the whole, much more grave, and is specially bad in the delirious cases."

ERNEST JONES.

A CONTRIBUTION TO THE SYMPTOMATOLOGY OF PARALYSIS

(42) **AGITANS.** (*Zur Symptomatologie der Paralysis Agitans.*)

G. MARKELOFF, *Neurolog. Centralbl.*, Nov. 16, 1909, p. 1202.

Two cases are described. The first is an instance of paralysis agitans without tremor; the muscular rigidity, which was extreme, involving, in addition to the face and limbs, the muscles of the lids and eyeballs. The eyes were closed, the patient being unable to open them voluntarily. When she separated the lids with the fingers she could keep the eyes open for ten to twenty minutes. Voluntary movements of the eye were very slow, and limited in extent. The second case relates to a woman of 65, who presented a typical picture of the disease, but she also was unable to open her eyes, there being a pronounced degree of rigidity of the ocular sphincters, with, in addition, tremor of these muscles. No stigmata of hysteria were present.

EDWIN BRAMWELL

HYSTERIA, WHAT IT IS AND WHAT IT IS NOT. CHARLES K.

(43) MILLS, *Amer. Journ. of Insanity*, Oct. 1909.

THE recent definitions of hysteria advanced by Babinski and Dana are discussed. The former writer, it will be remembered, has defined hysteria as a nervous disorder induced by suggestion and cured by persuasion, while the latter defines it as "a morbid mental condition in which ideas or emotional states seriously and unwittingly control the body and produce more or less permanent and objective morbid states." Mills refrains from advancing a short definition, but comes to the following conclusions:—

(1) Hysteria is a disease called functional, because its material pathology is not understood, although it has such pathology; (2) it is a disease which has for its basis a constitutional condition spoken of with more or less accuracy as temperament, neuropathy or degeneracy; (3) it is a disease which manifests itself by well-defined symptoms, motor, sensory, vasomotor, visceral and mental; (4) hysteria may be caused in a variety of ways, the chief of which is suggestion, although emotion, physical injury or disease and other causes may enter; (5) emotional phenomena are frequently present in hysteria; (6) hysteria is favourably influenced and sometimes cured by psycho-therapy, but may require for its cure auxiliary measures, such as rest, drugs, food, massage, electricity, fresh air, and change of scene; (7) hysteria is a psychoneurosis, not in a technical sense an insanity, and must be differentiated from psychasthenia and all the accepted forms of insanity; (8) hysteria must be differentiated from neurasthenia, although hysteria and neurasthenia are often combined in the same

case; (9) hysteria is not simulation, although hysteria and simulation may be present in the same case.

EDWIN BRAMWELL.

A CONTRIBUTION TO THE CLINICAL STUDY OF DERCUM'S

(44) **DISEASE.** (*Contributo allo studio clinico della sindrome di Dercum.*) G. FUMAROLA, *Riv. di Patol. nerv. e ment.*, Vol. xiv., f. 11, 1909.

THIS paper gives a valuable study of Dercum's disease and a review of most of the literature concerning it. The author holds strongly to the theory of pituitary origin, and dismisses the other lesions that have been described, such as degeneration of Goll's tract, hydromelia, lateral sclerosis, etc., as being simply manifestations of a general instability of the nervous system. Some time is spent on a discussion of the futile attempts to classify forms of adiposis dolorosa by the shape and distribution of the tumours, and the author adds yet another table which, like similar academic exercises, is of no value as an aid to the elucidation of the pathogenesis or an understanding of the symptomatology of the disease.

The author did not obtain any good effects with thyroid administration, but is very sanguine as to the beneficial results from treatment with tincture of iodine and the local treatment of the adipose tumours with the Roentgen rays. F. GOLLA.

BLOOD-PRESSURE IN ALCOHOLIC INTOXICATION. (*Blutdruck*

(45) *bei Alkoholberauschten.*) W. HOLZMANN (of Munich), *Arch. f. Psych.*, Bd. 45, Ht. 1.

THE paralysing action of alcohol causes weakness of the heart action, diminution of the tonic action of the vagus fibres which slow the heart, and of the nerves which contract the vessels. In some intoxicated individuals, corresponding to the psychomotor excitement there is observed an irritation of the nerves which increase the rapidity of the heart action and of the nerves which contract the vessels, in addition to the paralysing effect of the drug. There result diminution of the systolic pressure, increase or diminution of the diastolic pressure, lowering of the tension of the pulse, increased frequency of the pulse, diminution of body temperature, and slowing of the circulation; in short, impairment of the blood-supply to the tissues. C. MACFIE CAMPBELL.

PSYCHIATRY.**DISORDERS OF CARBOHYDRATE METABOLISM IN THE**

- (46) **INSANE.** (*Störungen des Kohlenhydratstoffwechsels bei Geisteskranken.*) E. SCHULTZE and A. KNAUER (of Greifswald), *Allg. Ztsch. f. Psych.*, Bd. 66, Ht. 5.

IF we examine the urine of the insane with delicate methods, we frequently find in conditions of anxiety and depression, glycosuria, which often runs parallel with the mental disorder. The glycosuria is probably an effect, not a cause of the mental disorder, and is essentially an alimentary glycosuria; knowledge of this fact may be of practical importance in preventing the false diagnosis of diabetes.

C. MACFIE CAMPBELL.

AN ALTERNATIVE TO SERUM DIAGNOSIS IN SYPHILIS. (A

- (47) **proposito di uno propaggine della sierodiagnosi nella sifilide.)**
CORRADO TOMMASI, *Riv. di Patol. nerv. e ment.*, Vol. xiv., f. 7, p. 309.

CONCERNING a new syphilitic reaction. The author has investigated the method of Campana, which endeavours to show that a specific reaction can be shown to exist in syphilitic urine providing that it does not contain albumens. To 10 c.c. of fresh filtered urine 20 drops of a 1 per cent. solution of lecithin are added, the whole is intimately mixed, and then 3 c.c. of a mixture of equal parts of alcohol and ether is added. If now the test tube be allowed to stand, the ether will be seen to rise to the top, and in normal urines the mixture will remain opalescent, whilst in syphilitic urines the mixture becomes quite limpid in the course of the next twenty minutes. Campana obtained a positive result with this in syphilis nine times out of ten. The author has repeated these experiments, and his results tend to show that though the reaction may be fairly reliable in the florid stage of syphilis, it cannot be counted on as a means of diagnosis in cases of general paralysis.

F. GOLLA.

THE DIAGNOSIS OF SYPHILIS BY MEANS OF A CHROMATIC

- (48) **REACTION.** (*A proposito della sierodiagnosi della sifilide per mezzo di una reazione cromatica.*) G. TURCHI, *Riv. di Patol. nerv. e ment.*, Vol. xiv., f. 7, 302.

THE author has investigated the method of Schürmann. The method is based on a theory that lactic acid is primarily respon-

sible for the Wassermann reaction. Schürmann found, however, that he could not use the well-known Uffelmann test, and adopted the following method:—1 c.c. of serum is diluted with 3 c.c. normal saline, and a drop of perhydrol is added to the solution. After shaking, a mixture containing 0.5 g. phenol, 0.6 g. of a 5 per cent. solution of ferric chloride, 34.35 g. of distilled water is added, about 0.5 c.c. being used.

When this reagent is added normal serum should only show a light greenish yellow coloration, which generally disappears on shaking. Syphilitic serum should show a greyish-black coloration, and the solution should become opaque.

Schürmann claimed with this method to find results equal to those obtained by the Wassermann method, but a repetition of his experiments by the author tends to confirm the view expressed by Bach, that this method has no value at all as a method of diagnosis of syphilis.

F. GOLLA.

LATE HEREDITARY SYPHILIS. SPIROCHÆTA PALLIDA

(49) **PRESENT IN CONJUNCTIVAL MUCO-PUS AND CEREBRO-SPINAL FLUID.** (Hérédosyphilis tardive; présence du spirochète pâle dans le muco-pus conjunctival et dans le liquide céphalo-rachidien recueilli par ponction lombaire.) R. DUPÉRIÉ, *Gaz. hebdomadaire des Sciences médicales de Bordeaux*, 1909, p. 531.

A CHILD, healthy at birth, at the age of 2½ months developed a generalised syphilitic eruption and specific rhinitis. The spirochætes were found in great abundance in some ulcerations on the scrotum, and were less numerous in the conjunctival muco-pus and nasal discharge. Lumbar puncture performed several days before death gave issue to a fluid under normal tension, in which typical spirochætes were found. This is the first case on record of the spirochæta pallida having been found during life in the cerebro-spinal fluid. In Gaucher and Merle's case it was not discovered until twenty-four hours after death (*v. Review*, 1909, p. 427). The presence of the organism was not due to blood contamination—first, because several examinations of blood taken from the ear showed an absence of spirochætes; and, secondly, because the organisms were found on the surface of the pia before any blood had been effused.

J. D. ROLLESTON.

MODERN PROGRESS IN OUR KNOWLEDGE OF GENERAL

(50) **PARALYSIS.** ERNEST JONES, *Lancet*, July 24, 1909, p. 209.

THIS is a general account of Alzheimer's work in histopathology, and of the progress in our knowledge of the changes in the cerebro-spinal fluid, including the Wassermann reaction. The

writer contends that general paralysis should not, however, be regarded as the necessary paradigm of the psychoses.

AUTHOR'S ABSTRACT.

THE SYNDROME GENERAL PARALYSIS. (*Le syndrome paralysie (51) générale.*) RÉMOND and VOIVENEL, *L'Encéphale*, October 10, 1909, p. 277.

Is there any real distinction between general paralysis and pseudo-general paralysis? From the point of view of pathological anatomy, other toxic agents than syphilis can produce a true inflammatory meningo-encephalitis; and since in general paralysis the result of the inflammation is the disintegration and ruin of the anatomo-physiological system of the nevraxe, what does it signify whether this result be attained by the rapid action of microbic toxines, or of extraneous poisons (alcohol and lead), or of poisons of internal origin (diabetic and arthritic general paralysis)? Cases of traumatic origin are on record. Joffroy reported a case of general paralysis consequent on electrocution. Clinically no adequate distinction can be drawn between the different forms.

The localisation of the lesion is of more importance than its nature, and the dementia that characterises the psychical symptoms of all is due to the diffuse nature of the lesions. It may be impossible to draw any hard and fast line between true parasyphilitic general paralysis, syphilitic general paralysis (*i.e.* cases where the symptoms are due to syphilitic meningo-encephalitis), central atheromasia, saturnine, hepatic, neuritic, alcoholic and traumatic general paralysis.

Klippel's histological classification is as follows:—

- (a) Primary inflammatory general paralysis (parasyphilitic).
- (b) Secondary general paralysis, associated with other lesions, on which the inflammatory process of (a) is grafted.
- (c) Degenerative general paralysis, characterised by diffuse lesions of specific nature.

S. A. K. WILSON.

METABOLISM IN GENERAL PARALYSIS; AN EXAMINATION (52) OF THE URINE, BLOOD AND CEREBRO-SPINAL FLUID.

FRANCIS BARNES, *Amer. Journ. of Insanity*, Oct. 1909, p. 301.

THE total nitrogen excreted was low; the neutral sulphur was in the majority of instances high, while the ethereal was low.

ERNEST JONES.

ACUTE PARANOIA. (*Die akute Paranoia.*) THOMSEN, *Arch. f. (53) Psychiat. u. Nervenkrank.*, Bd. 45, Ht. 3, S. 803.

THOMSEN contributes to this subject an important article, 111 pages long, which should be read in the original. Twenty-five cases are

described in detail. Thomsen makes a desperate attempt, perhaps the last one that will ever be made, to establish the nosological separation of acute paranoia. His arguments are excellently presented, though the Kraepelin school would probably find no difficulty in answering them, and in referring most of the cases he describes to either the manic-depressive or dementia præcox category.

ERNEST JONES.

GANSER'S SYNDROME. F. D'HOLLANDER, *L'Encéphale*, October 10, (54) 1909, p. 301.

THE symptom of Ganser, consisting in random answers, is to be distinguished from the syndrome of Ganser which comprises amnesia, analgesia, stupor, and this answering at random. It is usually supposed that Ganser's syndrome is characteristic of hysteria, but the author's case is considered by him one of simple chronic paranoia.

S. A. K. WILSON.

ON CASES OF "ADOLESCENT INSANITY" IN CHILDHOOD. (Über (55) Fälle von "Jugendirresein" im Kindesalter [Frühformen des Jugendirreseins].) H. VOGT (of Frankfurt), *Allg. Ztsch. f. Psych.*, Bd. 66, Ht. 3-4.

VARIOUS authors have called attention to the occurrence in children of psychoses with symptoms similar to those in the typical psychosis of the adolescent period. In children the catatonic form of the psychosis is more frequent than the hebephrenic form, but no strict line of demarcation can be drawn. The author reviews the whole question and comes to the following conclusions:—(1) Even before the beginning of puberty psychoses occur which from the symptoms and course must be regarded as early forms of adolescent insanity; (2) in some cases the symptoms of precocious puberty are present; (3) the predominance of the catatonic form is intelligible in view of the marked neuro-muscular excitability of childhood; (4) many cases are grafted on already existing mental enfeeblement; (5) the outcome varies—recovery sometimes takes place; (6) from the point of view of differential diagnosis hysteria, muscular hypertonia with digestive disorders, organic disorders, and idiocy with catatonic symptoms come into consideration.

C. MACFIE CAMPBELL.

ON MANIA IN CHILDHOOD. (Über Manie im Kindesalter.) (56) M. LIEBERS (of Dösen), *Zentralbl. f. Nervenhk. u. Psych.*, 1909, Ht. 3.

A CASE of pure manic excitement in a boy of 4, hereditarily poorly endowed, following a severe attack of diphtheria; psycho-

motor excitement, elation, flight of ideas, attention unstable and easily distracted. After six months the symptoms simmered down, and the boy returned home; he still was somewhat irritable, had a facial tic, was intellectually somewhat behind the average, and lacked the power of continuous attention.

C. MACFIE CAMPBELL.

THE PROGNOSIS OF DEMENTIA PRÆCOX. (Die Prognose der (57) *Dementia praecox*.) E. MEYER (of Königsberg), *Arch. f. Psych.*, Bd. 45, Ht. 1.

IN an article of considerable length, including brief histories of numerous cases, the author discusses the above question, and concludes that, while the prognosis in dementia præcox is serious, it is not absolutely unfavourable: in his experience one-fifth to one-fourth of the catatonics, and over one-sixth of all cases, show a readjustment which lasts for years.

C. MACFIE CAMPBELL.

ON THE TREATMENT OF THE JUVENILE AND ADULT (58) INSANE, EPILEPTICS, AND IDIOTS IN A COMMON INSTITUTION. (Behandlung jugendlicher und erwachsener Geisteskranker, Epileptiker und Idioten in gemeinsamer Anstalt.) K. ALT (of Uchtsprunge), *Allg. Ztsch. f. Psych.*, Bd. 66, Ht. 3-4.

JUVENILE epileptics and idiots require psychiatric treatment and care as much as adults, and are in a special degree deserving of accurate investigation. It is neither desirable nor practicable to separate in different institutions the juvenile insane, epileptics and idiots according to curability, incurability, or type of disorder. A separate division in an institution for adults is preferable to a separate institution for juveniles. Treatment in institutions must be supplemented by family care organized by alienists.

C. MACFIE CAMPBELL.

TREATMENT.

CEREBELLAR SURGERY. (Ueber Kleinhirnhirurgie.) HILDEBRAND (59) (Berlin), *Deutsche med. Wchnschr.*, Nov. 18, 1909, p. 1999.

THE symptoms of cerebellar tumour are enumerated and the diagnosis discussed. Serous meningitis cannot always be excluded with certainty, while it is rarely possible prior to operation to foretell the nature of the growth. Extra-cerebellar tumours are often distinguishable from those within the substance of the cerebellum. Cysts offer a favourable outlook, only one death occurring among twenty cases which have been operated upon. Sarcomata, endotheliomata, fibromata and gummata are usually

well defined; gliomata are commonly diffuse, and tuberculomata often multiple. Borchardt has collected 101 cases operated on for cerebellar tumour. The diagnosis was corroborated in 39; of these 22 survived the operation, and in 17 there was improvement or cure. Of 20 tuberculous tumours, 8 recovered from the operation, but in only 2 was there a complete cure. Two cases of gummata are referred to, in one of which a cure was effected, the other patient succumbing. Among 30 cases of cerebello-pontine angle tumour, in 7 the patient survived the operation, while in 4 of these there was a definite cure.

EDWIN BRAMWELL.

REMOVAL OF PITUITARY TUMOURS BY THE NASAL ROUTE.

(60) F. SMOLER, *Wiener klin. Wchnschr.*, No. 43, Oct. 1909.

THE writer records one case where an unsuccessful attempt was made to remove a pituitary tumour by the nasal-sphenoidal route. The patient, a woman, aged 31, had suffered for eleven months from severe headache, vomiting and progressive loss of eyesight. She exhibited nystagmus and optic atrophy, but none of the typical signs of acromegaly, the only evidence in favour of a pituitary growth being an enlargement of the sella turcica as disclosed by an X-ray photograph.

At the operation the nose was reflected to the right side, the nasal septum and turbinates removed, and access to the pituitary gained through the sphenoidal sinus. As the hæmorrhage was very profuse, and as the patient had inspired some blood, it was thought wiser to delay removal of the pituitary till a second operation. The cavity was packed with gauze and the patient sent back to bed. She died two days later from an aspiration broncho-pneumonia.

The autopsy revealed an adenoma of the pituitary the size of a cherry.

In the light of the unfortunate accident in this case the writer strongly recommends a preliminary tracheotomy and plugging of the pharynx in all operations on the pituitary by the nasal route.

D. P. D. WILKIE.

OPERATION ON THE PITUITARY IN A CASE OF ACROMEGALY.

(61) P. LECÈNE, *Presse Méd.*, Oct. 23, 1909.

THE writer records a case of acromegaly in a man, aged 38, who had suffered from this disease for sixteen years and who had latterly been troubled with epileptic crises. A radiogram of the head showed a distinct enlargement of the sella turcica. Under general anæsthesia tracheotomy was first performed, and an attempt was made to remove the enlarged pituitary body by the nasal route. The nose was reflected downwards and forwards, the nasal bones

being chiselled through, and both frontal sinuses were laid open. The vomer was followed backwards to its attachment to the sphenoid, and the sphenoidal sinus laid open and its postero-superior wall broken through, exposing the pituitary body. The wound was 8 cm. deep and the hæmorrhage very free, so that an accurate observation of the state of the pituitary was impossible. With a curette the operator then removed a quantity of pituitary substance, which was found to be soft and friable. From the sense of resistance imparted to the curette it was impossible to decide whether or not the whole of the pituitary substance had been removed. The operation was accordingly concluded by stitching the nose back in position. The patient survived the immediate effects of the operation, but during the following five weeks had repeated rises of temperature, and died suddenly on the thirty-sixth day after operation. None of the signs of the acromegaly had meanwhile shown any improvement.

The autopsy revealed a malignant growth of the pituitary, with multiple intra-cerebral processes, and in the centre of the tumour, where the curette had penetrated at the operation, there was found a small collection of pus. Infection had spread from the nose through the sphenoidal sinus.

The tumour proved to be an epithelioma of the anterior lobe of the pituitary.

The writer believes that total extirpation of the pituitary by the naso-sphenoidal route is impossible, and he is doubtful whether such an operation is justifiable in cases of acromegaly, as up till now only two cases—those of Hochenegg and Exner—have derived real benefit from the operation.

D. P. D. WILKIE.

Reviews

AUSTRALASIAN MEDICAL CONGRESS. Transactions of the Eighth Session, held in Melbourne, October 1908. In 3 vols. Melbourne, 1909.

THESE volumes contain a number of papers of neurological interest. In the surgical section, in vol. i., B. Kilvington has a paper dealing with nerve anastomosis in facial paralysis and anterior poliomyelitis, while there are two communications on the subject of removal of the Gasserian ganglion, one by R. B. Duncan and the other by H. O'Hara, who propose a method following a route intermediate between those of the Rose and Krause-Hartley operations. In the section for Diseases of Children, vol. iii., there are three communications on infantile paralysis, Australia in recent years having suffered from several widespread and severe epi-

demics of poliomyelitis. The section of Neurology and Psychiatry, in vol. iii., contains some twenty papers dealing with very varied subjects, the majority, however, being of a psychiatric nature. Dr Eric Sinclair, the president of the section, gives in his address a comparison of the conditions, legal and medical, connected with the administration of lunacy in the different states of Australia. Amongst the other papers are two by J. M. Creed—one on Hypnotism as a therapeutic agent, the other on Treatment of Alcoholism.

Miss Callan, dealing with the relationship of female pelvic disease to insanity, comes to the conclusion that ovarian secretion is an important factor in dementia præcox. Flashman and Latham, from experimental observations, consider that although in the majority of cases of general paralysis syphilis is the primary cause, some forms of diphtheroid organisms may play a considerable part in the production of the pathological picture.

J. H. HARVEY PIRIE.

BERICHT UEBER DIE LEISTUNGEN AUF DEM GEBIETE DER ANATOMIE DES CENTRALNERVENSYSTEMS. Prof. Dr L. EDINGER und Dr A. WALLENBERG. Vierter Bericht, 1907-08. Leipzig: S. Hirzel, 1909. M. 4.

THIS volume fully maintains the reputation of its predecessors. The authors have had the assistance of Drs Brodmann, Heinrich Vogt and Ariens Kapper in certain departments of the work (cerebral cortex, forebrain, and comparative anatomy respectively). There are 742 bibliographical references, with abstracts of the more important of these. There are eleven chapters in all, embracing a general oversight, methods of investigation, histology, forebrain, midbrain, hypophysis and epiphysis, some long tracts (especially motor and sensory), cerebellum, medulla, cranial, peripheral, and sympathetic nerves and nuclei, and comparative anatomy.

The editors in their preface note that while during the two years included in the scope of their reports there are no discoveries of great importance, much careful work has been done in filling up details and in completing and correcting previous researches.

The arrangement of the bibliographic references renders it easy for anyone to obtain information as to the work done during 1907-08.

ALEXANDER BRUCE.

MENTAL DISEASES IN THE FRENCH ARMY. (*Les Maladies Mentales dans L'Armée Française.*) A. ANTHÉAUME and R. MIGNOT. Paris: Delarue, 1909, p. 253. 4 fr.

THE scope of this book is, as its title indicates, somewhat limited, but within that field its subject is of considerable importance,

especially in view of the conditions of military service which prevail in most continental countries.

The first part is statistical, and the figures are derived from the official army records as well as from those of the military asylum at Charenton. The statistics are presented in the form of tables, graphic and synoptic, with various percentages worked out from these. These show a considerable increase in the number of discharges from the army on account of mental disease since 1877, the increase being from 60 to 340. The ratio per thousand has not, however, altered much. The ratio per thousand of discharges owing to mental disease to discharges from all causes has actually diminished. Figures are also given for the various divisions of the army into officers, non-commissioned officers, and privates, as well as according to length of service, and whether home or foreign. As was to be expected, the foreign legion shows the highest percentages. Suicide is also more common in this division. A table is given of all the cases treated at Charenton during the four years 1905-08, the total number being 101. The diseases from which they suffered are given, and general paralysis heads the list with 36, of whom 23 were officers. Dementia præcox comes next with 23. These two thus form nearly 60 per cent. of all cases.

In the second part fuller particulars are given regarding the various forms of insanity exhibited by the patients at Charenton, with records of some of the more instructive. In the third part various administrative, medico-legal, and prophylactic measures are discussed. As regards the last, strong emphasis is laid on the advisability of subjecting recruits to a mental as well as a physical examination before enlistment. The same procedure is recommended in the case of soldiers guilty of repeated infractions of military discipline. In the fourth part is given a verbatim report of a discussion in the Chamber of Deputies of a proposal to carry out the above suggestion. It failed, however, to gain the approval of the Deputies.

The work concludes with a most useful bibliography.

JAS. MIDDLEMASS.

THE PSYCHOLOGICAL SIGNIFICANCE OF TROPISMS. (*Die Bedeutung der Tropismen für die Psychologie.*) Prof. J. LOEB. Leipzig: A. Barth, 1909, p. 51. M. 1.

THIS pamphlet is a reprint of an address to the Sixth International Psychological Congress, held at Geneva this year. Its subject is one that has been mooted from time to time to explain the phenomena of mental action, more especially of volition, on a physical or physico-chemical basis. It cannot be said that Prof. Loeb has done much to establish this by his address. The facts

he submits have reference to lowly organisms and to the phenomena of heliotropism they exhibit. A great deal more ground will have to be covered before the idea he puts forward can be considered even to have entered the region of reasonable hypothesis.

JAS. MIDDLEMASS.

BOOKS AND PAMPHLETS RECEIVED.

Parkes Weber. "A Case of Symmetrical Atrophy of Hand Muscles with Cervical Ribs" (*Trans. Med. Soc. Lond.*, Vol. xxxii.).

Sachs. "On the Structure and Functional Relations of the Optic Thalamus" (*Brain*, Part CXXVI., 1909).

M. Mignard. "La Joie Passive." Paris: Félix Alcan, 1909. 4 fr.

"Traité International de Psychologie Pathologique." Directeur: Dr A. Marie. Tome I.: "Psychopathologie Générale." Paris: Félix Alcan, 1910. 25 fr.

C. K. Mills. "Hysteria: What it is and what it is not" (*Amer. Journ. Insan.*, Oct. 2, 1909).

Viviani. "Catalettica guarita mercè l'ipnotismo." Arezzo: Ettore Sinatti.

Sachs. "The Wassermann Reaction in its Relation to Diseases of the Central Nervous System" (*Journ. Amer. Med. Assoc.*, Sept. 1909).

Joseph Collins and B. Sachs. "The Value of the Wassermann Reaction in Cardiac and Vascular Disease" (*Amer. Journ. Med. Sc.*, Sept. 1909).

Roth and Gerlach. "Der Banklehrling Karl Brunke aus Braunschweig. Juristisch-psychiat. Grenzfragen." Halle: Carl Marhold, 1909. M. —75.

A. Pick. "Initialerscheinungen der zerebralen Arteriosklerose." Halle: C. Marhold, 1909. M. —75.

Franz Windscheid. "Die Diagnose und Therapie des Kopfschmerzes." Halle: Carl Marhold, 1909. M. 2.

Milne Bramwell. "Hypnotism and Treatment by Suggestion." London: Cassell & Co., 1909. 5s.

Dubois. "Pathogeny of the Neurasthenic State." Authorised Translation by E. G. Richards. Edinburgh: William Green & Sons, 1909. 2s.

Brodmann. "Vergleichende Lokalisationslehre der Grosshirnrinde." Leipzig: J. A. Barth, 1909. M. 12.

W. Aldren Turner and Thomas Grainger Stewart. "A Text-Book of Nervous Diseases." London: J. & A. Churchill, 1910. 18s.

Review

of

Neurology and Psychiatry

Original Articles

DISSOCIATION OF SENSATION IN THE FACE OF THE TYPE INVERSE TO THAT IN SYRINGOMYELIA. THE RECOGNITION OF CONTACT IN THE EYEBALL THROUGH THE FIBRES OF PAIN.¹

By WILLIAM G. SPILLER, M.D.,

Professor of Neuropathology and Associate Professor of Neurology in the
University of Pennsylvania.

A CLINICAL case, even without careful study of the lesion producing the symptoms, occasionally affords a valuable contribution to knowledge. The following report is deemed worthy of publication because it throws some light on the position of the sensory fibres of the trigeminal nerve within the pons, and indicates the fibres by which contact with the eyeball is recognised.

Ziegler, aged 37 years (1909), was referred to Dr John H. Musser, November 3, 1907. He denied syphilitic infection. He had been in good health until two years previously. He then had for a time dull pain in the lumbar region, difficulty in voiding urine, and constipation. The relation of these signs to his later condition is uncertain. In April 1907 he became easily tired. In August 1907 he noticed a roaring noise in the left ear, and hearing became impaired; at the same time headache and vertigo developed, and he began to be uncertain in walking, especially in going down stairs. He had a burning sensation which began at the left corner of the mouth, extended over the

¹ Read before the Philadelphia Neurological Society, Oct. 22, 1909.

left eye, and then down the entire right side of the body. He described this sensation as a scalding feeling. The headache was sharp, and was located in the occipital region.

These symptoms gradually increased in severity. About two weeks before admission to the hospital the man noticed a drooping of the left corner of the mouth. The vertigo became worse. At the examination his gait was somewhat hesitating, and he had a tendency to go to the left. He had some rotary nystagmus and decided lateral nystagmus, and paresis of the left external rectus muscle. The patellar reflexes were increased. Dr G. E. de Schweinitz found no changes in the optic discs and the visual fields for white and red were normal. Dr B. A. Randall found incomplete but extreme deafness for all tones in the left ear, with reduced bone conduction, a little evidence of middle-ear disease. The hearing in the right ear seemed to be normal.

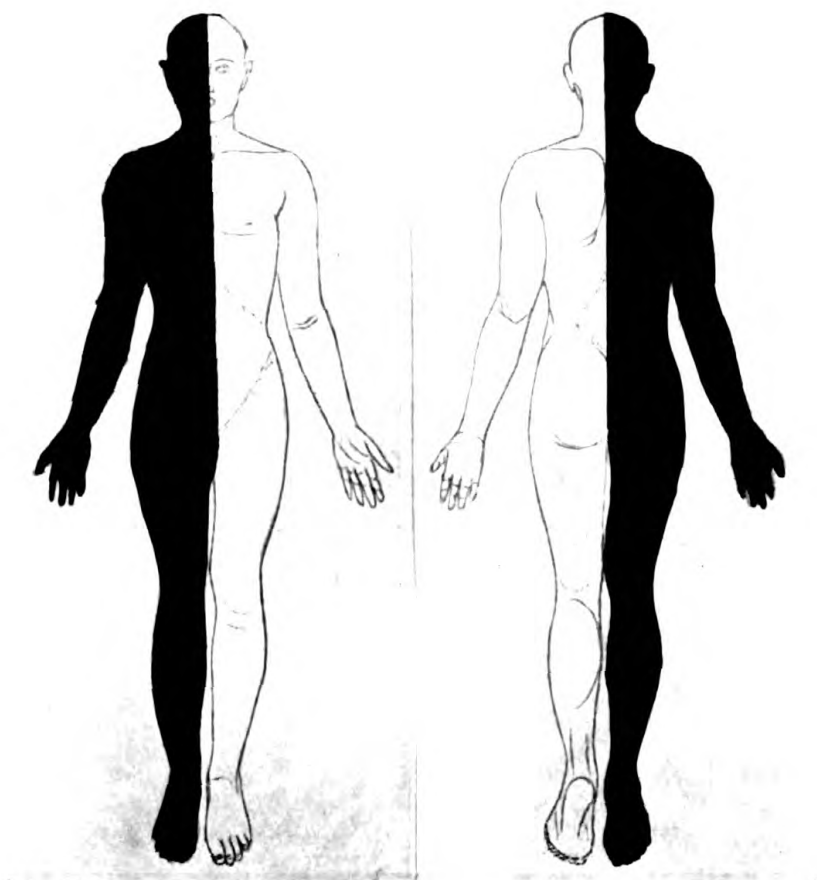
He was seen at this time by Dr C. K. Mills, and it is not surprising that a tumor of the left cerebello-pontile recess was diagnosed. The left nerve deafness, the left facial paresis, the left external rectus muscle paresis, and the ataxia were strong points in favour of this diagnosis, and no weakness was present. One sign, however, may not have received sufficient attention, it was the sensation of burning beginning in the left side of the face and extending over the entire right side of the body. This sign indicated involvement of the central sensory tracts, and with the integrity of the central motor tracts would seem to point, even at this early period of the disorder, to a lesion behind the pyramidal system.

Dr C. H. Frazier exposed the left cerebello-pontile recess, November 16, 1907, but no tumour was found. A gush of cerebro-spinal fluid seemed to relieve intracranial pressure, and following the operation improvement in many of the symptoms occurred.

The man returned to his home, and was readmitted to the hospital January 1, 1909. In May 1908 he began to vomit about once daily; this continued about one month, and then the vomiting occurred about once a week until the time of his readmittance. His speech became "thick," indistinct, and a peculiar rolling of the head from side to side began.

Dr de Schweinitz reported, January 20, 1909, as follows:—O.D. vision, 4/25; O.S., 4/20. There is complete paralysis of

PLATE 3.



FIGS. 1 and 2.



FIG. 3.

To illustrate Dr Spiller's Paper.

the left external rectus muscle. O.D. is congested, and there is abrasion of the corneal epithelium. The right conjunctiva and cornea are anæsthetic, but not the left. There is no papilloedema, but a little œdema of the fibre layer of the retina, especially on the nasal side. Left eye: no papilloedema, and retinal circulation is about normal, but outer half of each disc is exceedingly pallid, indicating atrophy. Field of vision with hand unlimited.

The man was seen at this time by Dr Alfred Reginald Allen, who diagnosed a lesion of the left tegmentum of the pons.

I give condensed my notes taken February 11, 1909. They represent the condition at the present time, as no essential change has occurred. He has been frequently examined by me during the past nine months, and is now in the service of Dr Mills.

Speech is very peculiar, indistinct, thick, somewhat explosive, monotonous, bulbar; each word is distinctly separated from every other word, but speech is hardly scanning. There is distinct up and down nystagmus in looking upward or downward, and lateral nystagmus in looking to either side; but no paralysis of associated ocular movements. The tongue is protruded straight. He has entire loss of sensation for heat, cold and pain on the entire right side of the body, including the face and limbs. He has slight impairment of sensation of heat but not of cold over the left forehead. Tactile sensation is entirely normal over the entire right side in the parts in which temperature and pain sensations are lost, and sense of position is promptly recognised in the right hand. Tactile sensation is entirely lost in the left side of the face in the distribution of the fifth nerve, but pain and temperature sensations are normal in this region, excepting the slight impairment of heat sensation in the left forehead. The tactile loss does not extend over the scalp behind a line drawn vertically to the ear, or into the distribution of the cervical nerves on the left chin. Deep pressure is felt below the left eye, possibly from disturbance of the adjoining sensory area, but is not felt above the left eye. When the mouth is opened the jaw deviates markedly to the left. The left temporal and masseter muscles are completely paralysed, and there is much flattening in the portion of the face normally occupied by these muscles, presumably from

atrophy. The soft palate moves normally on each side. Finger to nose test shows extreme inco-ordination in each hand, equal on the two sides. Grasp of each hand is fully normal. Biceps and triceps reflexes are about normal on each side. The upper and lower extremities are not weak. Patellar reflex is exaggerated on the right side, but is normal on the left side. Persistent ankle clonus is obtained only on the right side, but there is no positive Babinski reflex. The man can stand only when supported on each side, and can take steps, but movements of the lower limbs are extremely inco-ordinated.

He is perfectly intelligent, and the tests are made with certainty because of his ready responses. The paralysis of the left seventh nerve varies somewhat in the different examinations. Taste sense was tested several times, but the results were not satisfactory; it is probably intact on both sides of the tongue. The eyes were examined in Dr de Schweinitz's clinic by Dr Williams, July 7, 1909, and he reported as follows:—Temporal sides of discs are pale, whole retinæ are blurred and œdematous, as are also the edges of discs; there is no papilloœdema.

At the present time, when a test-tube containing hot or cold water is placed upon the right eyeball the man is entirely unable to recognise the changes of temperature. The contact of the head of a pin he recognises very imperfectly if at all in the right scleral conjunctiva, but somewhat in the right cornea. Sensations of heat or cold are promptly recognised in the left scleral conjunctiva or cornea, and contact with the head of a pin is promptly felt in the left eyeball. Irritation of either eyeball does not produce a reflex of the lids, because of the great impairment of sensation in the right eyeball, and of the facial paresis involving the orbicularis palpebrarum on the left side.

Dr C. P. Grayson gives the following report of the laryngeal examination:—October 21, 1909. The throat is not easily examined, not only because of the abundant salivary secretion, but also because of the patient's inability to expectorate it. Although I was unable to see the vocal cords, I saw perfectly well the arytenoids and a portion of the ventricular bands. On phonation the excursion of the right arytenoid is not only complete but exaggerated, since it moves beyond the median

line in its attempt to meet the left, the movement of which is so restricted that it shows scarcely more than a slight twitch. Without being positive, I am confident that the left cord is paralysed.

Two groups of symptoms in this case are of special interest :

(1) The dissociation of sensation of the syringomyelic type (preservation of tactile sensation and of sense of position, loss of pain and temperature sensations) on the entire right side of the body, including face and limbs, with an inverse type of dissociation of sensation to that of syringomyelia (preservation of pain and temperature sensations, except of heat sensation over the left forehead, with loss of tactile and pressure sensations) strictly confined to the distribution of the left fifth nerve, and with loss of function of the motor portion of the left fifth nerve.

(2) The greatly impaired or lost ability to recognise contact, heat and cold sensations in the right eyeball, on the side in which tactile sensation is preserved in the face as well as elsewhere ; with the preservation of recognition of contact in the left eyeball on the side in which touch sensation is entirely lost but pain sensation is preserved, in the distribution of the left trigeminal nerve.

Inasmuch as the symptoms in this case have not changed in any important details at least during the last nine months, and papillœdema has not developed, the diagnosis of tumour is questionable. The symptoms in association with marked pallor of the temporal sides of the discs suggest multiple sclerosis. Softening or cavity formation of the pons is at least possible, but not probable.

The lesion seems to be one that attained its full development at least nine months ago, and is now very little if at all progressive. Its situation must be in the left tegmentum of the pons. It implicates the central fibres of pain and temperature sensations coming from the entire right side of the body, probably those from the trunk and limbs being contained within the tractus tecto- et thalamo-spinalis or Gowers' tract within the left side of the pons, and those from the face possibly in the central tract for the face fibres nearer the raphé, as the central tract of the trigeminal nerve in the medulla oblongata is believed by some to be situated a little in front of the hypoglossus nucleus.

The lesion involves the left sixth nerve and the left acoustic nerve or its central tracts passing to the right side of the brain stem. It involves completely the motor portion of the left trigeminal nerve in or near the motor nucleus; it involves also all the fibres of touch in the left trigeminal nerve, and slightly those of heat coming from the left forehead. The sensory root of the trigeminal nerve divides soon after entering the pons; some of its fibres pass a short distance upward to terminate in the sensory nucleus within the pons, whereas a large portion of the fibres from this root passes downward into the medulla oblongata near the periphery of the pons. The ascending fibres probably are those of touch, and are implicated, together with the motor fibres of this nerve, in the lesion; whereas the fibres which descend near the periphery of the pons probably are concerned with temperature and pain sensations, and these evidently are not implicated in the lesion. The central fibres from the nucleus accompanying the spinal root of the trigeminal nerve cross the raphé at different levels, and are not seriously implicated in the lesion. Whatever explanation may be offered for the peculiar sensory disturbance in the distribution of the left fifth nerve, it seems clearly demonstrated by this case that the tactile fibres separate soon after entering the pons from the pain and temperature fibres of this nerve.

Babinski¹ has stated that he has been unable to find any carefully studied case of crossed bulbar anæsthesia of the inverse type to that of syringomyelia, *i.e.* preservation of temperature and pain sensations and loss of tactile and muscular sensations. It is strange, as he remarks, that in bulbar anæsthesia this inverse type is never seen. The theory of different tracts for the different forms of sensation is founded on the examinations of spinal cord lesions, and he concludes that it is incorrect so far as the brain stem is concerned. This case studied by me seems to indicate that the fibres of touch and muscular sensations (pressure) in the trigeminal nerve separate immediately on entering the pons from the fibres of temperature and pain sensations in a manner similar to that of posterior root fibres. It would indeed be strange if after decussating through the raphé of the pons and medulla oblongata they should reunite to form a single sensory tract.

¹ Babinski, *Revue Neurologique*, 1906, p. 1177.

It is possible that some other case may be on record in which a lesion of the pons has caused a type of dissociation of sensation the opposite to that of syringomyelia, as has occurred in this case I have studied, but I do not know of it.

The peculiar behaviour of the eyeballs in regard to recognition of contact needs explanation. On the right side on which tactile sensation of the face was normal but pain sensation was lost, contact of the eyeball with the head of a pin was so imperfectly recognised as to make it doubtful whether it was recognised at all. On the left side in which tactile sensation of the face was lost but pain sensation was preserved, contact with the eyeball was promptly recognised. The case would appear to justify the statement that recognition of contact in the eyeball depends more upon the fibres of pain than upon those of touch. When a foreign body rests upon the eyeball the sensation is chiefly one of discomfort or pain.

Sherrington makes the following statement in regard to this matter:—"The cornea and ocular conjunctiva are rich in pain spots, but have no touch spots; so also the glans penis. The eyelid sweeps over the cornea without being felt."¹

"There is a difference of opinion as to whether any touch can be felt on the cornea without pain. Nagel has pointed out that touches can be felt on the conjunctiva and cornea without any painful or disagreeable quality in them. It is the ease with which the corneal endings provoke pain which is denoted by the term 'pain spots' as used in the above paragraph."

The absence of touch spots in any portion of the body is interesting. Rivers and Head² do not refer to the cornea, but they state that the glans penis is not sensitive to cutaneous tactile stimuli, though pressure is correctly appreciated and localised with fair accuracy. It appears to me as probable that a similar condition exists in the eye. The patient studied by me seemed to recognise occasionally contact in the right eye if some pressure over the eyeball were made with the head of the pin.

¹ C. F. Sherrington, "Text-Book of Physiology," by E. A. Schäfer, vol. ii., p. 987, 1900.

² Rivers and Head, "Brain," vol. xxxi., 1908.

70 DISSOCIATION OF SENSATION IN THE FACE

DESCRIPTION OF FIGURES.

Figs. 1 and 2.—The shaded areas indicate the loss of pain and temperature sensations, with preservation of tactile sensation and sense of position in the hand.

Fig. 3.—The shaded area indicates the loss of tactile and pressure sensations, strictly confined to the distribution of the fifth nerve, with preservation of pain and temperature sensations, except impairment of heat sensation over the left forehead.

A CASE OF RAPIDLY FATAL ACUTE POLIOMYELITIS IN AN ADULT.

By J. H. HARVEY PIRIE, B.Sc., M.D., M.R.C.P.Ed.,

Assistant to the Professor of Medical Jurisprudence, Edinburgh University ;
Clinical Tutor in Medical Wards, Royal Infirmary, Edinburgh.

THE clinical notes available of this case are very brief. They are as follows :—The patient was an unmarried woman of 41, of good constitution, whose only previous complaint had been a “housemaid’s knee.” On November 7, 1908, she was seen by a friend, who found her in good spirits but complaining of shivering, due, she supposed, to having caught cold while washing the stair. On the 8th she did her work as usual, and was out in the afternoon. On the 9th she was found by her friend lying in bed, and unable to move her legs, the paralysis having come on on the night of the 8th. There was no pain. On being helped out of bed she collapsed on the floor into a sitting posture, and it required two people to lift her back. There was no incontinence of urine noticed then. On the 10th her condition remained apparently much the same. On the 11th she was seen by Dr A. B. Flett, to whom I am indebted for these notes. He found her in good spirits, pulse and temperature about normal, but she was completely paralysed in the lower extremities—a flaccid paralysis. She was also passing urine in the bed, but did not seem to notice it. He ordered her removal to the Royal Infirmary. When seen by the friend in the evening she seemed very bright, and joked about being carried downstairs to the ambulance waggon.

She was found dead in bed at six o’clock the following

morning. Death, therefore, occurred about five days after the first symptom and three days after the appearance of the paralysis.

The post-mortem examination was made on the 13th by Professor Harvey Littlejohn, to whom I am indebted for the spinal cord and for permission to record the case.

The body was well-nourished, there was an old right-sided pleurisy, the aorta was markedly atheromatous, but the heart appeared healthy. The liver was small, the gall-bladder large and distended, with clear fluid from the impaction in the cystic duct of a large calculus. The other abdominal organs appeared healthy. The spinal cord was throughout its whole length soft and swollen, the pia mater being congested, and on section the grey matter looked distinctly reddish to the naked eye, while congested vessels could also be seen in the white matter. The brain was not examined.

The cord was hardened in formalin, and parts from various levels carried through paraffin and sections stained with hæmatoxylin and eosin, hæmatoxylin and picro-fuchsin, polychrome methylene blue, pyronin methyl green, and the Gram-Weigert stain. The shrinkage in the size of the cord in carrying through was very striking, presumably due to the removal of water from the highly œdematous cord. Other parts were examined by the Marchi method, and sections of the cauda equina and nerve roots were also examined by the same methods.

Microscopical Appearances.—The whole length of the spinal cord is affected; the inflammation is undoubtedly most marked in the lumbo-sacral enlargement, it is less intense in the dorsal region, but it is only a little less severe in the cervical region than in the lumbo-sacral.

The larger vessels are hyperæmic, containing red blood cells of normal appearance, but no apparent excess of leucocytes. The veins as well as the arteries share in the engorgement, but it does not appear to have extended much to the capillaries. This engorgement is not confined to the anterior spinal vessels and their branches in the anterior median fissure, the vessels in the meninges, especially the veins, being greatly congested, and so are those accompanying the nerve roots. The radial vessels running inwards through the white matter from the periphery show up as prominent streaks, often widening somewhat as they

approach the grey matter; they seem to be specially prominent in the cervical enlargement.

The arterial walls are somewhat hyaline in appearance. There is no sign of thrombosis in any of the vessels. Petechial hæmorrhages occur, but no extensive ploughing up of the tissue. They are, however, more frequently actually in the tissue of the cord than simply round vessels, and are usually, though not always, in severely affected parts of the cord. A common site for them seems to be about the base of the anterior fissure, but they may be in any part of the grey matter, and, to a much less extent, of the white matter. Little importance should, however, be attached to these hæmorrhages, as death was probably asphyxial, and they may quite well be merely terminal phenomena.

The most striking feature is the great increase in the cellular content of the cord, an increase partly directly connected with the vessels, partly free. Around the vessels the cells are so abundant as often to form a sort of collar, and they occur not merely about the anterior central vessels, but round any or all of the vessels going in from the periphery. It is not always easy to distinguish veins from arteries in the cord, but I am inclined to think the veins are affected in this way at least as much as the arteries. The cells lie chiefly in the adventitia of the vessels—where there is any definite perivascular space it appears to be the result of shrinkage; at all events it never contains any great accumulation of round cells. The accumulation is prominent round the vessels in the anterior fissure, which have a well-marked adventitia, but in their further course within the grey matter of the cord their branches do not appear to be more involved than the radial vessels in the white matter.

The cellular infiltration is not confined to the near neighbourhood of vessels however. It is present to a moderate degree in the pia mater, but not in the nerve roots, nor is it present, except perhaps to a very limited extent, in the white matter, away from the vessel sheaths. It may be noted here that corpora amylacea were not abundant, but when present were mostly in the superficial portions of the posterior columns.

In the grey matter the cellular infiltration extends beyond the immediate neighbourhood of the vessels, although often thickest and forming a sort of focus round them. In the

anterior horns the cells are in parts so thickly strewn as almost to entirely obliterate any other structures. This is especially the case in the lumbar region, but parts of the cervical enlargement are almost as severely affected. The dorsal region is, on the whole, less thickly dotted with cells. The infiltration bears no special relation to the ganglion cells nor to any of the cell-groups in particular. The lesion is not confined to the anterior horns, the lateral horns, central region, and base of posterior horn being affected; round the tip of the posterior horns, however, there is much less general infiltration, although the vessels there are still congested and possessing a "collar" of round cells.

Nature of the Cellular Infiltration.—The majority are mononuclear cells—

(1) Small round cells with a net-like stroma, granules at the nodes, and no surrounding cytoplasm, indistinguishable from the small lymphocytes of the blood. The majority of the cells in immediate relationship to the vessels are of this type; they also occur in the tissues.

(2) Somewhat larger cells, with similar nuclei, but a slight rim of red-stained protoplasm (with methyl green pyronin stain).

(3) Others a little larger still, but with a lighter stained, more open network in the nucleus, a larger area of surrounding protoplasm staining a fainter pink—the typical "mononucleated cell" or "polyblast" of Maximow. These form probably the majority of the cells lying free in the tissues away from the vessel walls.

(4) Other still larger phagocytic cells with a very pale blue staining, open nucleus network, and a vacuolated protoplasm. These are certainly more abundant in the lumbar region than elsewhere, the stage of the process there being probably rather more advanced. In some of them the remains of partially disintegrated polymorphonuclear leucocytes could be distinctly made out.

Polymorphonuclear leucocytes are unusually abundant, forming quite a fair proportion of the cell accumulation in the grey matter, especially in the lumbo-sacral cord; they are less numerous, though still fairly common, at higher levels, but they form very little part of the adventitial cellular accumulations.

Plasma cells are also present, but only in small numbers.

Nerve Cells.—These are distinctly more affected in the lower part of the cord than in the upper. In some parts of the anterior horns of the lumbar region it is difficult to see any motor cells at all; those present are swollen, rounded in outline, and have largely lost their Nissl granules; the nucleus, however, usually remains central in position. In the dorsal region the cells of both anterior and lateral horns, and also those of Clarke's column, appear affected, though not very severely; they are somewhat swollen and rounded in outline, but still granular. In the cervical cord the cells present a much more normal appearance, although a little swollen, and with their processes apparently broken off short.

No organisms were detected either in the cord or in the meninges in the sections. Cultures were not made at the post-mortem.

There are several points of interest about this case. The age of the patient is unusual; although acute poliomyelitis of adults is now a well-recognised condition, it is of very rare occurrence in a person of forty-one. It is also unusual to get death so soon in poliomyelitis of adults—five days after the first constitutional symptom, three days after the first appearance of paralysis. The absence of fever is also noteworthy. The lumbo-sacral enlargement of the cord was obviously the first portion to be affected, and it would seem as if there had been later a rapid upward extension of the process, so that clinically the case would come under the type of a Landry's paralysis, one of the eight types recognised by Wickman (1). From the observations of Wickman, Zappert (2), etc., this type of case would appear to be commoner in older children and adults than in quite young children. Death in these cases usually results from paralysis of the respiratory centres in the medulla, and although in this case the brain was unfortunately not examined, the inflammatory process was so marked in the upper cervical cord as to make it almost certain that it had extended at least as high as the medulla, if not higher.

A more detailed examination of the sensory functions would have been interesting, as the one fact noted, viz., that the patient, although perfectly conscious and intelligent, seemed to be unaware of her incontinence of urine, points to a sensory paralysis as well as a motor one. From the involvement of the posterior

horns such a sensory paralysis would be quite explicable on anatomical grounds, there being a posterior poliomyelitis as well as an anterior one.

With regard to the microscopic appearances of the cord in this condition, these have in recent years been described in such detail by Wickman, E. F. Buzzard (3), and many others, that I need not do more than refer to a few of the striking features of this case.

(1) It is obvious that the condition is not one limited to the area of the anterior spinal vessels. The vessels of the grey and white matter are affected alike, their walls being infiltrated with cells, but it is only in the grey matter that there are accumulations of nucleated cells away from the vessels. The soft membranes are also the seat of cellular infiltration.

(2) The cells appear to be within the adventitial sheath; where there is any definite perivascular space it never contains any accumulation of cells, and the balance of evidence appears to me to be in favour of the view that the so-called "perivascular lymph space" is an artefact caused by shrinkage of the tissues.

(3) There is no evidence from this case supporting Batten's (4) view of a primary thrombotic origin of the disease.

(4) Recent investigations by Landsteiner and Popper (5) have established the infective nature of acute poliomyelitis, and they have succeeded in transmitting the disease to monkeys, but the causal organism appears to be too small to be visible. These results have been confirmed by Knœpfelmacher (6), Flexner and Lewis (7), Krause and Meinike (8), Römer (9), and Landsteiner and Levaditi (10). Whatever agent has been at work in this case, the first response to the invasion seems to have been an emigration of polymorphonuclear leucocytes. Although polymorphs have generally been found in the cellular infiltrations in poliomyelitis in small numbers, I have nowhere seen them recorded as being present in such large numbers as they are in this case except by Schmaus (11).

(5) With regard to the origin of the round cells we come on to much-debated ground, and I will only say that a large proportion of the cells in the adventitial sheaths are indistinguishable from the lymphocytes of the blood. The endothelium of the smaller vessels particularly has the appearance of being in active proliferation, and I regard it as at least one source of the

larger "mononucleated" cells of the infiltration. The phagocytic action of some of the mononuclear cells on the polymorphonuclear cells have been referred to. Although it is impossible to exclude positively proliferation of neuroglia as a source of "small round cells" in the grey matter, it is impossible to feel they take any great part in their formation, as Nissl (12) maintains, the dependence of the cells on the vessels seeming so clear. There is certainly no excess of neuroglia in the white substance; and the sharp limitation of the nuclear increase there to the vessel walls, and also the presence of similar cellular infiltration in the meninges, appears to me conclusive evidence against the neuroglial origin of these cells.

(6) With all due deference to Wickman, I do not care to follow his lead in labelling this condition as Heine-Medin's disease. The principle of employing persons' names in nomenclature is discouraged in all other branches of science, and is equally to be condemned, I think, in medicine, as giving no clue to the nature of the condition. His previous suggestion to omit "anterior" and call the disease "acute poliomyelitis" seems much better. While it admittedly does not cover the whole picture of the disease, it does describe in pathological terms the most important features of it, and gives in a brief, convenient form, and as succinctly as any such system of nomenclature can, the keynote of the disease.

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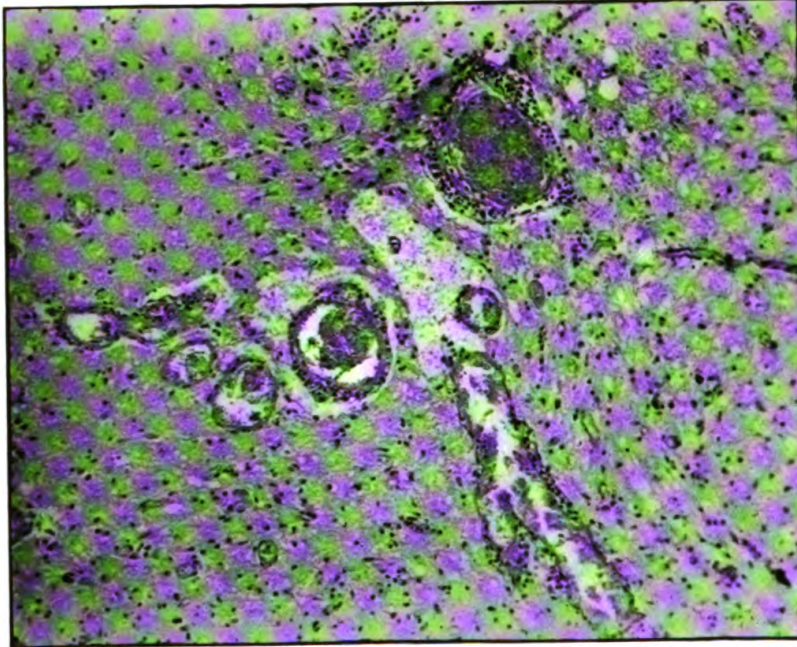


FIG. 1.

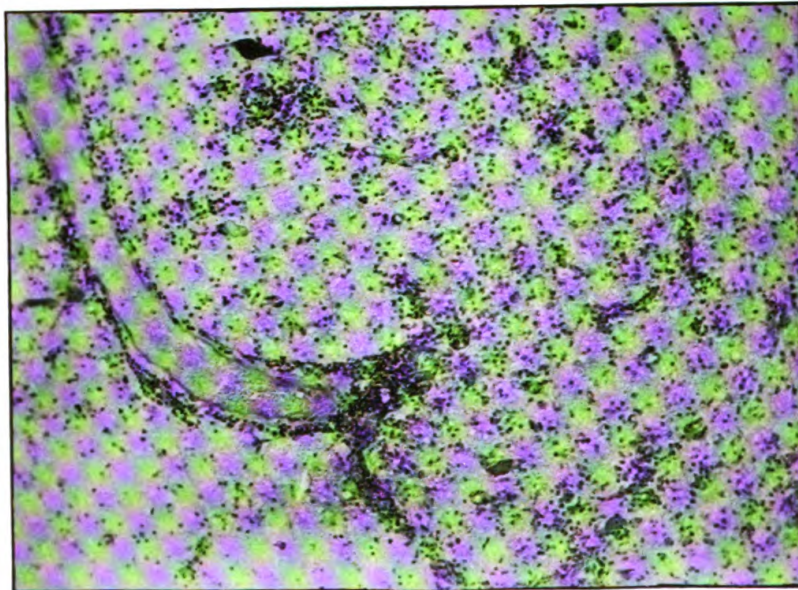


FIG. 2

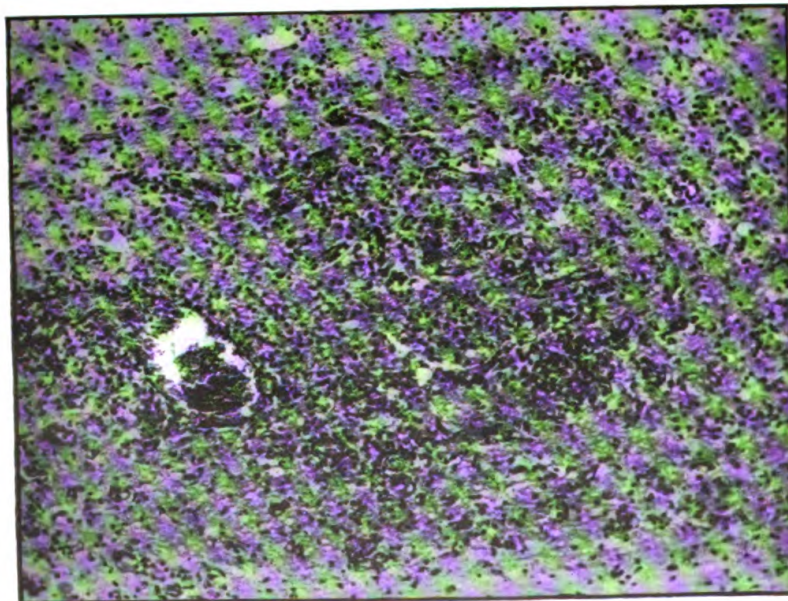


FIG. 3

CASE OF RAPIDLY FATAL ACUTE POLIOMYELITIS 77

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DESCRIPTION OF FIGURES.

- Fig. 1—Transverse section of vessels in the cord near the bottom of the anterior median fissure, showing presence of small round cells in the adventitial coat of the vessels, while the perivascular space, which is probably the result of shrinkage, contains granular debris but practically no cells.
- Fig. 2.—Section from the cervical cord at the edge of the anterior horn. Engorged radial vessel with numerous small round cells on its walls, also cellular infiltration of the grey matter.
- Fig. 3.—Portion of the anterior horn from the lumbar region showing engorgement of vessels, cellular infiltration of the grey matter, and absence of nerve cells.

CEREBRAL ABSCESS SECONDARY TO BRONCHIECTASIS; FITS WITH VISUAL AURA; HEMICHROMATOPSIA (RELATIVE HEMIANOPSIA).

By EDWIN BRAMWELL, M.B., F.R.C.P.,
Assistant Physician to the Royal Infirmary, Edinburgh.

RECORD OF THE CASE.

W. W., aged 51, was seen by the writer at Leith Hospital from time to time during 1904 and 1905, and was treated for bronchiectasis.

Upon *November* 4, 1905, he came to the hospital and stated that during the previous week he had been troubled with headache and giddiness. The pain was at first on the top of the head, but on the day following its appearance it was worse on the left side, and upon this day he had a fit. (He had never had a fit before.) According to the statement of his wife

the patient was convulsed all over in the fit, and was unconscious for from fifteen to twenty minutes. After the fit he vomited, but this was the only occasion upon which he had done so. The headache continued, and on the fourth day after its onset he had another fit similar to the first. The pain, which had been very severe since the second fit, was referred to the left side of the head. A thorough physical examination was made. The optic discs were normal, and no evidence of local cerebral disease was detected. He was advised to come into hospital.

November 15.—The patient was seen again to-day. He said that the headache had been constant since his last visit, and that it had been so severe during the previous night that he had had no sleep. The pain was referred to the left side of the head above, behind, and in front of the left ear. There had been no more fits, nor had the patient vomited.

The temperature was 99.8° and the pulse 128. The optic discs were normal. There was no defect of hearing in the left ear, no history of ear discharge, and no cranial tenderness. Nothing pointing to a local intracranial lesion was elicited. The tongue was furred and the bowels said to be constipated. The patient was admitted to hospital with a diagnosis of bronchiectasis and possible intracranial abscess.

November 20.—The writer, with the kind permission of Dr Langwill, into whose ward the patient had been admitted, again examined the case. The patient on this occasion volunteered the statement that before each fit he had been annoyed by flashes of light before his eyes. He compared the sensation to what might be expected if someone standing on the opposite side of the street had from time to time flashed a light from a mirror into his eyes. He could not say that the flashes had seemed to come from one side, nor did he notice them more in one eye than the other. The flashes were not, he said, very bright, and they were not coloured, but of a "greyish" appearance. They occurred at first about every half minute as far as he could remember, and persisted for an hour to an hour and a half before each fit, gradually becoming more frequent, until immediately before the attack they were almost continuous. He had only experienced these flashes before the two fits. No additional information regarding the attacks or their mode of onset could be elicited.

Upon making a very careful examination of the fields of

vision, it seemed to me that there was a slight contraction to the right. This observation was confirmed by Dr Arthur Sinclair, who kindly examined the fields on the following day. Dr Sinclair found a right homonymous hemianopsia "complete in extent, but relative in degree," and corroborated the previous observation as to the absence of optic neuritis. The patient stated that he was unaware of anything the matter with his sight until the defect was pointed out. He was, unfortunately, not questioned regarding his vision after the fits, but as he was an intelligent man the probability is that he would have referred to any defect had he noticed it. The ability to read was again tested, and it was ascertained that he had not the slightest difficulty in naming letters and deciphering words. He was right-handed. There is no mention in my notes of the case as to his ability to name objects, hence it is probable that this point was not inquired into.

A cerebral abscess, probably situated in the left occipital lobe, was diagnosed.

The question of operation was discussed but dismissed, since the patient's general condition was very unfavourable owing to an exacerbation of the pulmonary trouble. Further, the headache had become much less pronounced since his admission to the hospital.

December 1.—The patient was again examined by the writer and Dr Sinclair. The conclusion arrived at was that there was a very slight absolute limitation of the periphery of the right field. In addition, it was observed that a ball of bright red silk, about the size of a large cherry, although recognised almost out to the normal limit of the field on the right side, was not recognised as red until it was brought beyond the middle line. Unfortunately other colours were not employed at this examination. The patient was too ill to admit of a perimeter chart being taken; the fields were, however, mapped out on a chart by Dr Sinclair, afterwards from memory (*vide* Plate 7, Fig. 1).

Upon November 28th the patient complained of pain on respiration over the base of the left lung. Localised friction was detected in this situation. He coughed up a cupful of very offensive expectoration on the morning of December 1st. The sputum contained numerous cocci and some rod-shaped bacilli, regarded as probably *B. coli*. An empyema was suspected,

but could not be localised. On December 18th we find a note—
“The patient gradually became weaker, and died this evening.”

A post-mortem examination was made by Dr W. T. Ritchie on December 19th. It is unnecessary for present purposes to quote his report *in extenso*. Suffice it to say that a diffuse cellular bronchiectasis was found. On the left side “at the lower part of the pleura there is an encysted, yellowish-grey stinking abscess which is continued down behind the spleen and left kidney and behind upper part of the descending colon. On section of the left lung one finds the bronchi in lower lobe dilated, and a probe can be passed from one of these dilated bronchi into the abscess cavity outside the lung. The bronchi contained stinking pus.”

The spleen and kidneys were rather pale. The liver showed some cloudy swelling. The heart, peritoneum, pancreas, stomach, and intestines were healthy.

“*Brain*.—The dura is somewhat tense. The arachnoid space is distended with slightly turbid fluid, especially over the vertex. The convolutions of the occipital lobe are somewhat flattened, especially so on the right side. There is a purulent meningitis over the cerebellum and at the optic chiasma.”

Summary.—Bilateral bronchiectasis. On left side, secondary localised empyema and perinephric abscess.

Examination of the Brain (E. B.).—The brain was hardened in formalin. Ten days later a vertical transverse section was made through it slightly in front of the parieto-occipital fissure and passing through the centre of an area on the outer surface of the left hemisphere, to which the membranes were somewhat adherent (*vide* Plate 5, Fig. 2). Examination of the cut surface showed that the knife had passed through the centre of an abscess which was situated in the posterior part of the left hemisphere. The abscess, which was about the size of a walnut, occupied approximately the left inferior quadrant of the cut surface (*vide* Plate 5, Fig. 1). It had a well-defined capsule, and contained thick greenish pus. An area of cortex rather larger than a shilling had been destroyed by the abscess wall. The area of cortex which is replaced by the abscess wall is shown in Plate 5, Fig. 2, where it is surrounded by a dotted line. The area involved is located in the posterior extremity of the second and third temporo-sphenoidal convolution, for the

well-marked vertical fissure which bounds it posteriorly (*vide* Plate 5, Fig. 2) is the sulcus occipitalis lateralis (sulcus lunatus of Elliott Smith), the homologue of the Affenspalte. The angular gyrus is not involved.

The appearance of the section of the brain at this level is well shown in Plate 5, Fig. 1, the pus having been washed out of the abscess cavity before the photograph was taken. The brain substance around the abscess appeared normal to the naked eye. Cultures were made from the pus from the abscess cavity as well as from the meninges, but the record has unfortunately been mislaid.¹ The position of the area of cortex destroyed by the abscess seems to correspond to the terminal supply of posterior branches of the middle cerebral artery. A horizontal transverse section was then made through the brain, the section being made so as to pass through the centre of the abscess (*vide* Plate 5, Fig. 3). The abscess was seen in this section to pass further inwards towards the middle line than had appeared to be the case in the vertical section. It appeared to the naked eye to approach very near to, if it did not actually involve, the optic radiations. The posterior horns of the lateral ventricles were somewhat dilated, and contained some turbid fluid. The lining membrane of the ventricles presented an unhealthy appearance, and the brain tissue around the right posterior horn seemed somewhat softened, the softening being evidently of recent origin.

A second vertical transverse section was made through the brain at the point where the fissure of Rolando leaves the superior longitudinal fissure. A second abscess, very similar in size to that already described, with a well-defined wall was exposed. This abscess was situated in the centrum ovale of the right side, immediately dorsal to the posterior third of the corpus callosum. The close proximity of the abscess to the cavity of the lateral ventricle and the circumstances that the inflammatory changes were more marked in the right than in the left ventricle, suggested that the meningitis was very probably secondary to this second abscess although no direct communication between the abscess and the ventricle could be demonstrated.

¹ Dr W. T. Ritchie found the missing report after this article was set up. The pus from the thorax and abdomen contained mixed organisms and streptococci, the pus from the brain abscess and meninges the latter only.

Serial sections were made of the posterior pole of the left hemisphere in order to study the better the relations of the abscess. The sections were cut in the vertical transverse plane to a thickness of 50 m., and stained by Ford Robertson's modification of Heller's method. Photographs of several of these sections are shown on Plate 6. By comparing these it will be seen that the abscess extends in a forward direction below the cortex. The relation of the abscess to the optic radiations is particularly well seen in Plate 7, Fig. 2. From this section it will be seen that although the abscess has not, as far as can be judged by the naked eye, actually encroached upon the optic radiations, it has certainly implicated the fibres of the inferior longitudinal bundle. Further, it would seem almost certain from the appearances, the shape of the ventricular lumen, and the flattening of the abscess wall in their immediate vicinity, that the optic radiations must at least have suffered from pressure.

The *abscess wall*, which was examined in sections stained by van Gieson's stain, was seen to consist of two very distinct layers. Internally it was lined by a layer of closely packed pus cells presenting an irregular inner surface, but pretty sharply defined from the stratum which lay beneath it. This consisted of connective tissue fibres, round and elongated cells, these being particularly numerous towards its inner aspect, and large numbers of blood vessels. In its deeper part this layer consisted of compact connective tissue. Externally the fibrous capsule was fairly well defined from the surrounding brain substance, although for a distance of several millimetres around the abscess there was evidence of an inflammatory reaction. The walls of the blood vessels were thickened, and there were numerous round cells in their neighbourhood. These last-mentioned changes, it is to be particularly noted, extended into the optic radiations.

Examination of sections posterior to the abscess showed that there were no signs of degeneration in the white matter surrounding the calcarine fissure. A definite degeneration was to be seen, however, in fibres passing to the third occipital convolution (Plate 6, Fig. 1). These are probably fibres belonging to the inferior longitudinal bundle, which have been interrupted by the abscess (compare von Monakow's diagram (1)).

Sections of the right and left lateral geniculate bodies were

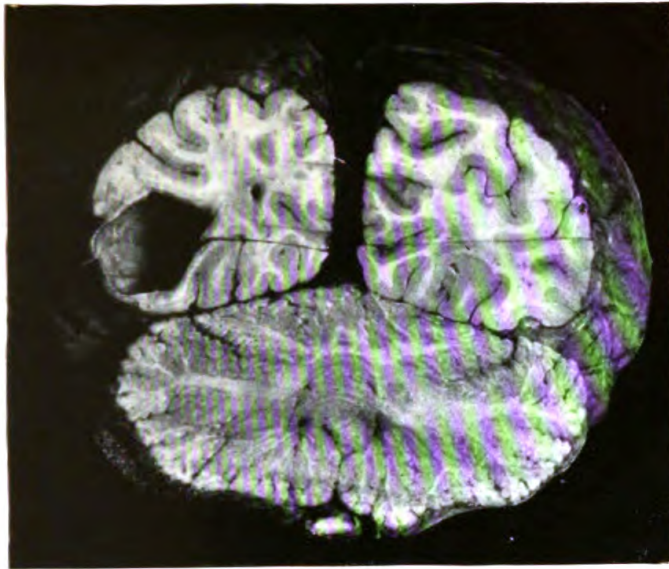


FIG. 1.

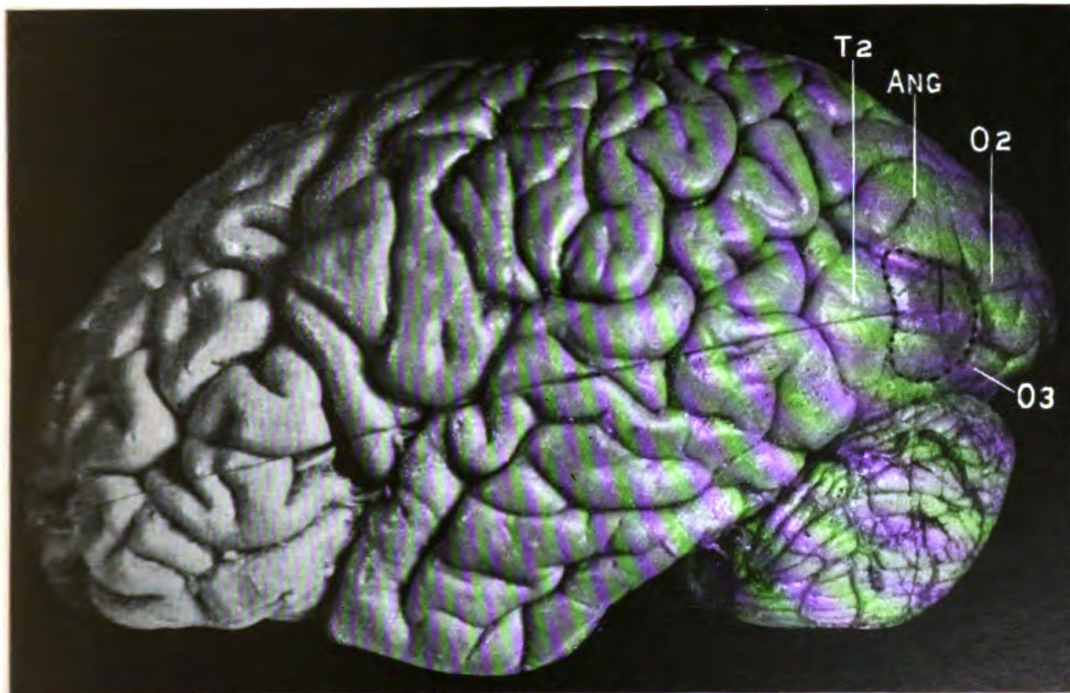


FIG. 2.

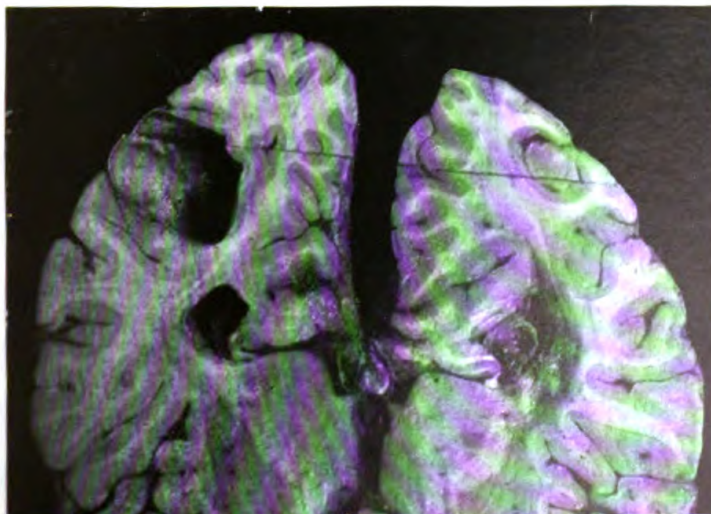


FIG. 3.

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FIG. 1.



FIG. 5.



FIG. 2.

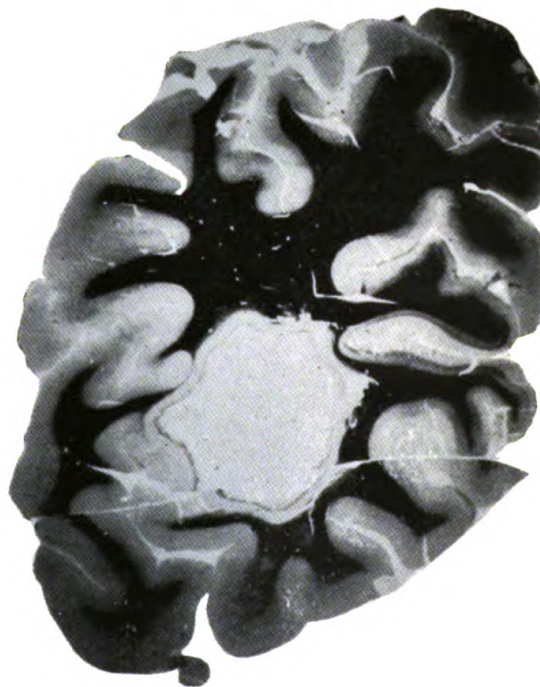


FIG. 6.



FIG. 3.

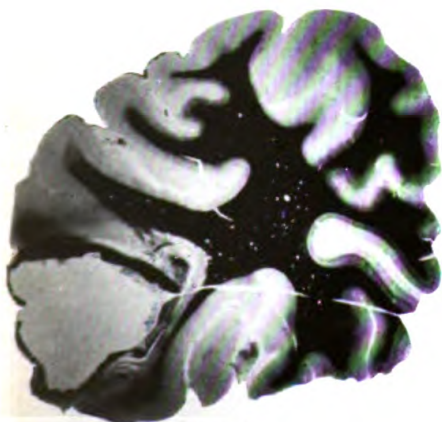


FIG. 4.



FIG. 7.

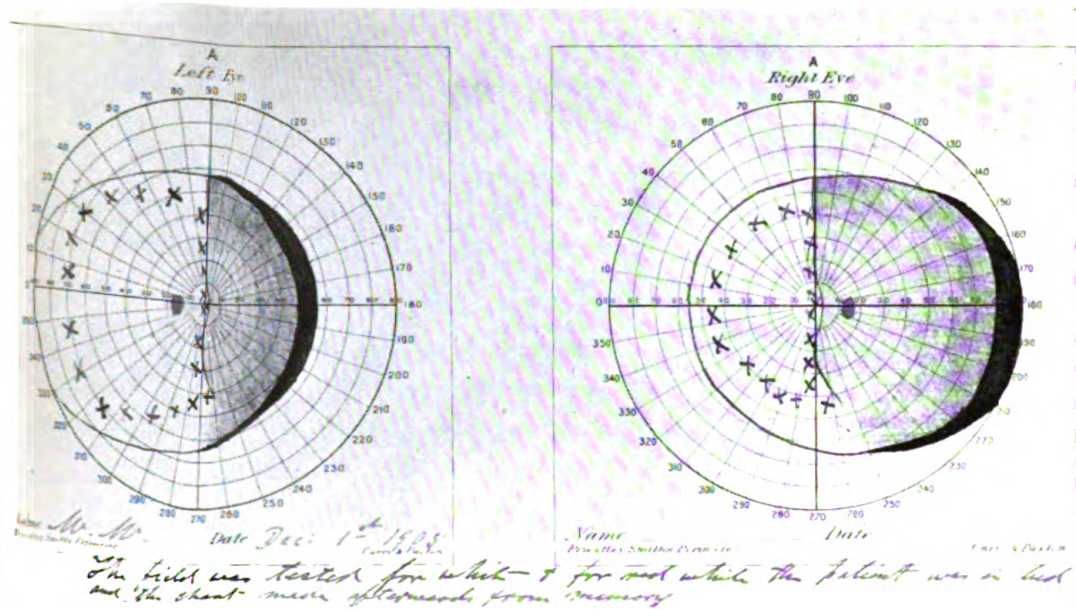


FIG. 1.



FIG. 2.

To illustrate Dr Bramwell's Paper.

cut and stained by Nissl and van Gieson's method, but no definite pathological changes were detected in the cells of the left as compared with the right side, such as are figured by von Monakow (2) in the left lateral geniculate body in a case in which there was an extensive lesion of the occipital and temporal lobes of the same side.

RESUMÉ OF THE CASE.

A man, aged 53, who had suffered from bronchiectasis for more than two years, complained one day of headache and giddiness. On the following day he had an epileptic fit, preceded by a visual aura. The aura was compared by the patient to the sensation one might expect if a bright light from a mirror were flashed into the eyes from time to time. The flashes, which were of a "greyish colour," occurred at first about every half minute, but increased in frequency until they became almost continuous at the time of onset of the fit, an hour and a half later. The patient could not say whether the flashes appeared to come from one side, nor had he noticed that they were more visible in one eye. The convulsions appear to have been general. Two days later the patient had a second fit. This was preceded by a precisely similar aura, which persisted for about the same time. These were the only two occasions upon which he had had the visual sensations. The headache was very severe and was referred to the left side of the head.

Examination revealed a right homonymous hemianopsia complete in extent but relative in degree. Subsequently a very slight absolute limitation at the periphery of the right field was detected. In addition, the patient was unable to recognise a red object as red to the right of the middle line. Other colours were not tested. The patient was right-handed. There was no letter- or word-blindness. The optic discs were normal. There were no other local symptoms.

A diagnosis of bronchiectasis with an abscess in the left occipital lobe was made. Operation was decided against, for the pulmonary symptoms became much more serious after his admission to hospital, while the headache was much less severe and no further cerebral symptoms had developed. The patient gradually became weaker, and died six weeks after the first cerebral symptoms had appeared.

Post-mortem, a bilateral cellular bronchiectasis was found, while on the left side there was a secondary localised empyema and a perinephric abscess. There was also a recent basal meningitis. Two abscesses were found on section of the brain. One was situated in the left hemisphere, the other in the right centrum ovale immediately dorsal to the posterior third of the corpus callosum. Each was about the size of a walnut.

The abscess in the left hemisphere had destroyed a portion of the cortex, rather larger than a shilling. This area was situated in the second and third temporo-sphenoidal convolutions, immediately anterior to the lateral occipital sulcus. The abscess was surrounded by a well-defined capsule. The middle fibres of the inferior longitudinal bundle were invaded, and to the naked eye it appeared certain that the optic radiations must have been pressed on. Microscopic examination showed that the inflammatory reaction around the abscess had extended into them. No degenerated fibres could be traced to the cortex of the calcarine fissure, but a degenerated tract, probably consisting of fibres of the inferior longitudinal bundle, was traced to the third occipital convolution. No changes were detected in the cells of the left geniculate body when compared with those on the right side.

REMARKS.

There are several points of interest in connection with this case. In the first place, brain abscess secondary to bronchiectasis is certainly uncommon, although the relationship is well-known; secondly, hemiachromatopsia is a symptom of undoubted rarity; while, lastly, it appears that there are very few cases reported in the literature in which a visual aura was proved post-mortem to depend upon local organic disease of the brain.

Brain Abscess and Bronchiectasis.—This association has recently been emphasised in a thesis by the late Dr Schorstein (3). Nevertheless a reference to some of his conclusions, and to those of other observers, will serve to indicate in what respects the present case of brain abscess resembles and differs from others dependent on the same cause.

Virchow, according to Oppenheim (4), was the first observer to recognise the association between abscess of the brain and pulmonary disease. This was so long ago as 1853. The relationship is now a matter of common knowledge. Indeed,

disease of the lungs would appear from Rudolf Meyer's (5) statistics to be only second in importance to traumatism and otitis as a cause of brain abscess, for among a large series of cases of abscess of the brain, this observer found that 21·88 were traumatic, 20·86 otitic, and 12·86 of pulmonary origin. That brain abscess secondary to pulmonary disease is far from frequent is pointed out by Schorstein, who states that of 3700 autopsies at the Brompton Hospital during the years 1882 to 1904 inclusive, and of over 10,000 post-mortems at the London Hospital from 1894 to 1904, there were only nineteen cases of cerebral abscess associated with pulmonary disease. The relative frequency of individual pulmonary diseases as causes of cerebral abscess has been estimated as follows by Claytor (6) from 58 collected cases:—Bronchiectasis, 20; purulent bronchitis, 9; empyema, 10; gangrene, 7; tubercle, 5; abscess of lung, 3; pneumonia, 2; bullet wound, 2. Schorstein analysed 69 cases from the literature, and found the following associated pulmonary diseases:—Bronchiectasis, 38; empyema, 15; gangrene of the lung, 6; tubercle, 3; acute pneumonia, 3; abscess of lung, 2; foetid bronchitis and tubercle, 1; emphysema and bronchitis, 1. Among the 3700 cases examined post-mortem at the Brompton Hospital there were 63 instances in which bronchiectasis was the cause of death, the determining factor in 17 cases being broncho-pneumonia, in 13 cases abscess of the brain. Schorstein concluded that bronchiectasis is the most frequent pulmonary antecedent of brain abscess, and that the latter is the second most common cause of death in bronchiectasis. Other statistical data arrived at by this writer are of interest in connection with the present case. Thus, among 51 cases, a single abscess was found in 32. The abscess was on the left side in 25 of these. Where the abscesses were multiple, they were situated on the left side in 3, on the right side in 6, and on both sides in 9. The proportion of males to females was 5 to 1. In 51 cases, in 32 of which the abscess was single, it was situated in the brain as follows:—Frontal, 9; frontal and parietal, 1; parietal, 9; parietal and occipital, 4; occipital, 4; temporo-sphenoidal, 1; cerebellum, 2; and central ganglia, 2. The average duration of life from the appearance of the first symptoms in 19 cases collected by Schorstein was ten days.

The modes of death in brain abscess, according to Oppenheim and Cassirer (7), are four, viz.:—(a) œdema of the brain and hydrocephalus; (b) progressive and further extension of the abscess with development of encephalitis and meningo-encephalitis; (c) rupture of the abscess into the ventricles or on to the meninges; (d) complications.

Visual Auræ in Organic Disease.—Visual auræ in epilepsy are not uncommon, yet from a study of the literature it would appear that cases are of extreme rarity in which a visual aura was proved by post-mortem examination to be associated with organic disease of the brain. Sir William Gowers (8), for instance, writing in 1901, remarks: "The only autopsy which I believe has been published of a case in which the visual warning existed is one which I have recorded." Ferrier (9), when discussing regional diagnosis in Clifford Allbutt's system, does not allude to visual auræ in connection with the occipital lobe, although, in describing the symptoms of disease of the parietal lobe, he states: "Dr Hughes Bennett has shown that irritative lesions of the angular gyrus give rise occasionally to optical delusions or flashes of light, followed by temporary amblyopia." Oppenheim's monograph on "Tumours of the Brain" (10) contains a reference to Gowers' case only. Bruns (11), in his work upon the same subject, also mentions this case, and remarks that he has met with two similar instances, the record of only one of which I have been able to find. In Duret's excellent article (12) on "Tumours of the Occipital Lobe," no mention is made of the symptom. Spiller (13), writing in the "Eye and Nervous System," refers to but two cases, both of them reported by Byrom Bramwell. Cross (14), in the Bradshaw Lecture for last year, alludes to a case. Sir William Gowers, in his recent Hughlings-Jackson Lecture upon "Special Sense Discharges from Organic Disease" (15), narrates the histories of three cases in which a visual discharge was dependent upon structural disease, the existence of which was determined by operation. No case of abscess of the brain in which a visual aura was noted has, so far as the writer can ascertain, been reported. A perusal of Oppenheim and Cassirer's (16) exhaustive monograph, which has recently appeared, gives support to this statement.

The leading features of the reported cases, which I have been able to find, in which a visual aura was associated with organic

disease of the brain, and the diagnosis verified by post-mortem examination or operation, are tabulated on pages 88, 89. The aura in all, with the possible exception of Case 10, in which the appearance of the light was followed by visual hallucinations, was "crude in nature." In other words, in no instance was an elaborate aura, such as is sometimes met with in idiopathic epilepsy, observed.¹ Most of the patients complained of "flashes of light," others of a bright light before the eyes. In some the light was coloured, in others it was merely described as bright. It is interesting to note the frequency with which red is mentioned.² The visual sensations were often referred to one, or chiefly to one, eye, and then it was the eye opposite to the lesion. A temporary hemianopia during or succeeding the attacks was observed in four cases, while in two other cases the patient was completely blind during the paroxysms. A comparison with migraine, in which transient hemianopia is far from uncommon, and idiopathic epilepsy, in which the symptom does not occur, is of interest. Several patients complained of very severe headache on the side of the lesion during a paroxysm. A constant noise in the ear on the side opposite to the lesion during the attack, the noise being worse during individual paroxysms, was experienced by one patient (Case 1).

The data available for localisation permit of few conclusions. In every instance the cortex of the convexity of the hemisphere was the seat of the organic lesion. The mesial surface was also involved in two, the under surface of the brain in one case. In no case was the lesion limited to either of these surfaces. The angular gyrus was the seat of disease in the majority, but it must be borne in mind that in the four cases operated on the disease may possibly have extended over a greater area than was exposed

¹ The case of the Italian widow referred to by Sir William Gowers in his Hughlings-Jackson lecture is not included in the table, since the discharge involved other special sense centres. This case shows, however, that a visual aura dependent on organic brain disease may be of an elaborate nature. The patient suffered from convulsions, "preceded by the ringing of a bell on the left, by a very offensive smell, and the vision of a strange woman." Sir Victor Horsley removed a round encapsuled, subcortical tumour. It was situated in the temporal lobe and reached almost down to the uncus.

² Dr W. S. Colman (*Brit. Med. Journ.*, May 12, 1894, p. 1016), in referring to several interesting cases of hallucinations of vision associated with organic disease of the brain, also remarks upon the frequency with which the colour "red" appears in connection with them.

Cases in which a Visual Aura was associated with

	AURA.	DESCRIPTION OF ATTACKS.
Case 1. (Byrom Bramwell.)	Flashes of red and white light in right eye. Paroxysms last $\frac{1}{2}$ to 2 or 3 minutes and occur every 5 or 10 minutes. An attack lasts 3 or 4 weeks. At first once a year, later every 6 months. Attacks persisted for 10 years.	Had four epileptic fits. Flashes preceded last two. During paroxysms eyes turned slightly to right; palpebral fissures slightly narrowed; very slight tremors in orbicularis; eyes looked vacant; constant noise in right ear, worse during individual paroxysms.
Case 2. (Ditto.)	Bright flashes of light, worse she thought in the right eye. Resembled in colour and brilliancy "electric light." The bright appearance seemed to vary in size from a small button to a large globe. Flashes occurred very often.	During the attacks no major fits. The visual phenomena were associated with very severe headache, which was often accompanied by retching, vomiting, and flushing.
Case 3. (Sir William Gowers.)	One morning something seemed very brilliant before him, "as if he had a polished plate on his breast." Subsequently slight attacks with loss of sight (<i>vide</i> next column). At commencement of some of these attacks, as the sight was going he had a flickering of light "like a golden serpent" in the eye, moving in all directions very fast, seen with both eyes, but more before left than right.	Slight attacks almost daily of the following character. A pain commences in the neck, goes across the head, comes down between the eyes, and is felt on each side of the bridge of the nose. If walking the road or path seems to get narrower and narrower, so that he hardly knows where he is going, and simultaneously the sight fails, loss of sight not complete. He can only see just before him, nothing on either side, but he can generally see better to the right than to the left.
Case 4. (A. Hughes Bennett.)	Sudden appearance of a bright red light in both eyes. Its position could not be exactly defined. In less than a minute this passed off, leaving a temporary complete hemianopsia to right.	Occasional general epileptic attacks. Frequent slight seizures consisting of the visual aura, headache, giddiness and some mental confusion; no loss of consciousness.
Case 5. (Bruns.)	Attacks of continuous flickering before the eyes.	... ..
Case 6. (Edwin Bramwell.)	Flashes of light (uncoloured) before the eyes. They occurred on two occasions: at first every half minute, later almost continuous; on each occasion, after lasting 1 to 1 $\frac{1}{2}$ hours, were followed by a general fit.	Two general epileptic fits.
Case 7. (Sir William Gowers.)	After a severe epileptic fit (the first he had had), remembered seeing a bright white light on his left. Later, many slight attacks, which were preceded by appearance of several small round objects, 7 to 10, to left of fixing point and above it. They were brightly coloured, red in middle; within this was a zone of blue, the centre being white, always the same, and lasted 5 or 7 minutes.	Attacks varied in degree, in slightest eyes fixed without deviation, slight tonic spasm of left face and head turned slowly to left, consciousness dulled for about a minute. In others left arm rigid, and in others eyes jerked to left.
Case 8. (Ditto.)	Fits preceded by a bright light in right of visual field. The visual spectrum, which she calls "twinkles," are "like stars." Generally denies that spectrum is coloured, but once said, "they are all colours, green and red and all, and there is a mist over my eye."	Numerous fits with loss of consciousness. Head and eyes turned to right. Tonic spasm followed by chronic movements of right side.
Case 9. (Ditto.)	Visual aura to left.	Fits.
Case 10. ¹ (F. R. Cross.)	Bright red flashes of light succeeded by visual hallucinations.	Left-sided epileptiform attacks.

¹ It is possible that this is the case referred to on page 90.

Organic Disease of the Brain (verified by Autopsy or Operation).

HEMIANOPSIA.	P.M. OR OP. ¹	NATURE AND POSITION OF LESION.	REMARKS.
Temporary right hemianopsia during attacks.	P.M.	Membranes adherent and thickened over 2nd left occipital convolution. Probably an old syphilitic lesion. Area about size of a shilling. Brain substance underneath sclerosed and atrophied for about $\frac{1}{4}$ inch. Brain elsewhere absolutely healthy.	Died of carcinoma of tongue. This case is of great importance, because lesion is very localised and of old standing. The position of the lesion is well seen in a beautiful plate.
Completely blind during paroxysms.	P.M.	Multiple melanotic sarcomata. A large deposit on the surface of the right occipital lobe just above the tip. "There can be little reasonable doubt that the flashes of light were the result of that particular nodule."	...
Marked loss of sight during attacks. Generally can only see before him, but better to right.	P.M.	Sarcoma of right occipital and parietal lobes. Involves O ₁ and O ₂ and superior and inferior parietal on outer surface. Cuneus and precuneus on inner surface.	A very extensive lesion, the location of which is shown in a diagram.
Temporary incomplete hemianopsia during and after attacks.	P.M.	Extensive cortical softening involving almost the entire cortical region on the right side, including the right angular gyrus, and reaching as far as the occipital and temporal convolutions.	..
Persistent right hemianopsia. Temporary complete amblyopia.	P.M.	Three tumours: (1) in substance of occipital lobe extending as far forwards as pulvinar; (2) on under surface of occipital lobe; (3) at posterior end of 1st and 2nd temporal convolutions.	Word blindness and colour anomia present.
Persistent right hemianopsia, complete in extent but relative in degree. Hemianchromatopsia.	P.M.	Cerebral abscess, size of a walnut, of about six weeks' duration and with well-defined capsule in posterior part of left hemisphere, an area of cortex of 2nd and 3rd temporal convolutions, bounded posteriorly by the lateral occipital fissure, and rather larger than a shilling, destroyed. The hemianopic defect almost certainly explained by pressure on optic radiations.	This case of great interest because of localised area of cortex destroyed.
Temporary left hemianopsia after attacks; extended to middle line except in a small area round fixing point. Began to lessen five minutes after fall disappeared.	OP.	Pia over supra-marginal gyrus milky, opaque and thickened. An incision above supra-marginal gyrus showed brain sclerosed. A firm patch of sclerosis in angular gyrus. †	There had been an injury to head some months before first fit. Attacks seem to have disappeared after operation, but some difficulty in reading and inability to write to dictation persisted.
Temporary hemianopsia to right after attacks.	OP.	Angular gyrus paler and wider than the other convolutions, and its posterior part was softened. On incision, a dark, grumous material escaped, as well as some pale gelatinous substance. It seemed to be an old blood cyst. It occupied a small region around termination of the parallel fissure.	The first fit followed half an hour after a fall on the head. The attacks recurred after the operation with the same aura, but the convulsion was now general.
...	OP.	Right angular gyrus exposed, and laceration of brain substance found.	Cerebral symptoms came on after severe blow on right side of head.
...	OP.	Scar after injury over region of right angular gyrus.	Cure after operation.

¹ P.M. or OP. = *Post-mortem Examination or Operation.*

by the surgeon. The fact, however, that in two of the cases submitted to operation the seizures afterwards disappeared certainly adds to the probability that the disease implicating the angular gyrus was the cause of the visual discharge. No case has, however, been recorded, so far as I can ascertain, in which a visual aura was proved by autopsy to be limited to this convolution.

A case reported by Hughes Bennett (20) is of interest in this connection, although in the report there is no mention of an organic lesion. This is no doubt the case alluded to by Ferrier (9), when he states: "Dr Hughes Bennett has shown that irritative lesions of the angular gyrus give rise occasionally to optical delusions, or flashes of light, followed by temporary amblyopia." The facts of the case are as follows:—

"A man, aged 36, received a blow on the right parietal region six years before he came under observation. For some years he had been subject to epileptic fits of a very violent nature. These are always preceded by the appearance of a bright red light, he thinks confined to the left eye, following which he has a general convulsive seizure. He was trephined over the right parietal bone, after which there was no return of the attacks for ten months. Subsequently these again returned in a form which was limited to the visual aura. Suddenly he would be seized with a feeling of fulness and confusion in the head, pallor, and a bright red light in the left eye. This would last from thirty seconds to a minute without loss of consciousness and then disappeared. Immediately afterwards the sight in the left eye was found greatly impaired. He could see light, but could not count fingers, and this deficiency extended over the entire field of vision. This condition lasted from a quarter of an hour to nearly an hour, when the eye gradually resumed its normal condition. Ophthalmoscopic appearances were normal. These facts were repeatedly tested by myself, as he had many such attacks every day, and, moreover, they could be produced by pressure over the tender cicatrix. The patient was trephined again, after which there was no return of the seizures while the patient remained under observation for several months." Mr Pearce Gould, who operated on this case, remarks (31): "At the operation nothing was observed to explain the mode of production of the epileptic attacks nor the beneficial results of treatment."

This case affords very suggestive evidence in favour of the existence of "a higher visual centre in each hemisphere immediately subserving the perception of visual impressions, that of the opposite eye in greater degree," a view which has been advocated by Sir William Gowers (23) on the basis of clinical observation, and is compatible with Ferrier's experimental conclusions (22).

There is then strong reason for supposing that a lesion of the angular gyrus may produce visual discharges, notwithstanding that no case has been examined post-mortem in which this symptom was present and disease found limited to this region.

On the other hand, in some cases in which a visual aura was met with the angular gyrus was not involved. Indeed, in the only three cases in which the lesion was proved by post-mortem examination to be localised (Cases 1, 2, and 6), the angular gyrus was not implicated. Byrom Bramwell's first case is of great importance in this connection. The lesion, evidently a chronic process, was located in the second occipital convolution. This case seems to prove definitely that a lesion situated in the second occipital convolution, and not involving the angular gyrus, may produce visual discharges.

Finally, from the available facts, we are justified in concluding, firstly, that a gross lesion, limited to the second occipital (Case 1) or posterior part of the second temporal convolutions (Case 6), may give rise to visual discharges; and, secondly, that although there appears to be no case on record in which a lesion proved by post-mortem examination to be limited to the angular gyrus produced a visual aura, yet there is strong reason for believing that a lesion so situated may do so.

Hemiachromatopsia.—The application of this term to the present case may perhaps appear not altogether justifiable, since the colour fields for red alone were tested. It may be that there was only a partial hemiachromatopsia or dyschromatopsia. There was also a reduction in the light sense complete, or almost complete, in extent, but relative in degree. The condition is more accurately described as a relative hemianopsia. The hemianopic defect, unlike that met with in several of the cases mentioned, was not a temporary exhaustion phenomenon, for its presence was determined a considerable time, several days, after the last fit.

From a study of the anatomical features of the case, I think there can be little doubt that the visual impairment was caused by interference with conduction in the optic radiations. The circumstance that the defect in the fields did not extend inwards as far as the middle line below the fixation point indicates that some of the fibres of the visual bundle have escaped, an explanation which is quite compatible with the anatomical appearances.

Defects in the colour fields with little or no defect in the fields for white have been observed in several cases in which the optic tract or optic chiasma were pressed on or included in a new growth (Uhtoff (24), Berry (25), Hill Griffith (26)). The recent observations of Bordley and Harvey Cushing (27) upon the alterations in the colour fields in cases of brain tumour are extremely interesting in this relation, since they indicate that a general increase of intra-cranial pressure may effect colour perception. These observations show that pronounced loss of colour perception is often met with in cases of brain tumour, and, further, that after operation, either palliative or radical, colour perception is regained. When the visual fibres are pressed upon, the loss of colour perception may be explained, as Mills (29) points out, by interference with fibres whose special business it is to transmit vibrations concerned with colour perception. Swanzy (28), alluding to relative cortical hemianopsia, remarks, "Sometimes the colour sense is lost, while the form and light senses are only greatly reduced in degree; and in such cases the colour blindness in the half field is probably due to the reduction in the light sense." He further states: "The view is now gaining ground that a relative cortical hemianopsia is a manifestation of a lesion of less intensity than that which causes cortical hemianopia." A similar interpretation may be applied to the present case, in which there appeared to be good reason for believing that conduction in the optic radiations had been interfered with.

The existence of a special cortical centre for colour is still *sub judice*. The problem was fully discussed by George Mackay (30) in 1888. He arrived at the conclusion that the case was "not proven." Charles K. Mills (29), who has recently summarised the available evidence, inclines to the view that "distinct centres for luminosity, form, and colour are differentiated in contiguous regions of the cerebral cortex." No undoubted case

appears to have been recorded in which a localised cortical lesion was associated with achromatopsia or hemiachromatopsia without any defect of the light or form senses. The writer is inclined to agree with those who believe that more facts are required before it will be possible to settle the question beyond doubt.

DESCRIPTION OF PLATES.

Plate 5.—Fig. 1.—Transverse vertical section slightly in front of the parieto-occipital fissure.

Fig. 2.—Outer surface of left hemisphere. The area of cortex destroyed by the abscess is surrounded by a dotted line. Ang=Angular gyrus. T2=Second temporal convolution. O2, O3=Second and third occipital convolutions. The vertical fissure immediately posterior to the abscess is the ascending limb of the sulcus occipitalis lateralis.

Fig. 3.—Horizontal section passing through abscess.

(The line of section in Figs. 1 and 3 is seen in Fig. 2.)

Plate 6.—A series of vertical transverse sections through the posterior pole of the left hemisphere.

Plate 7.—Fig. 1.—The fields of vision mapped out by Dr Arthur Sinclair (*vide* page 79). The black area denotes absolute, the grey relative impairment of the light sense. The crosses indicate the field for red.

Fig. 2.—The relation of the abscess to the inferior longitudinal bundle, the optic radiations and the ventricle are well seen.

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Abstracts

ANATOMY.

THE BRAIN STRUCTURES CONCERNED IN VISION. F. R. CROSS,
(62) *Lancet*, Dec. 18, 1909, p. 1799.

THIS paper reviews firstly the comparative anatomy of the visual path in the various orders of the vertebrates, then, in rather more detail, that of man. The structure and connections of the different portions of the visual cortex are next dealt with, then the visual reflexes, and, lastly, some points in the evidence obtained from post-mortem examination in connection with hemianopsia and also other forms of blindness.

J. H. HARVEY PIRIE.

PHYSIOLOGY.

REGULATION OF BODILY MOVEMENTS BY THE CENTRAL

(63) **NERVOUS SYSTEM.** (*Zur Regelung der Bewegungen durch das Zentralnervensystem.*) R. MAGNUS, *Arch. f. d. gesamt. Physiol.*, 1909, Vol. 130 ; (First Communication), pp. 219-252, (Second Communication), pp. 253-269.

As the result of experiments on the arms of brittle-stars, v. Uexküll came to the conclusion that in a diffusely extended group of nerve centres, stimuli tend to flow towards those centres whose muscles happen at the moment to be in a state of extension. Thus, if a brittle-star arm is so suspended that the muscles of one side are stretched, the centres corresponding to these muscles respond with special readiness to any stimulus whatsoever, and the arm strikes in the upward direction. In order to determine if a similar law holds in the case of higher vertebrates, the author examined the responses to stimulus of the limbs of spinal dogs (first communication), and of the tail of spinal cats (second communication)—the tail of the spinal dog he found to be unsuited for the purpose. His results are in uniformity with the principle enunciated by v. Uexküll.

The position of the limbs has a determining influence on the reflexes elicited in them. Previous extension regularly facilitates the occurrence of flexion reflexes, previous abduction the occurrence of abduction, and *vice versa*. This holds for the whole extremity as well as for the individual joints. In the hind limb of the spinal dog it was found that the influence of the proximal joint overcomes that of the distal. The position of the hip is of greater influence on the course of the reflex movement of the limb than the position of the knee, while the position of the knee is more important than that of the ankle.

The phenomenon is especially well-marked in the case of crossed reflexes. Thus, to take the special case of the crossed patella reflex, a tap applied to the left knee-tendon when the right hind limb happens to be in a bent position produces stretching of the right limb ; if, however, when the left knee-tendon is tapped the right limb happens to be stretched, its response is now one of flexion. A similar law of reversal holds for a large number of reflexes investigated by the author.

This reversal effect depends on alterations occurring in the central nervous organ (spinal cord) corresponding to changes in position of the limbs, in such a way that one and the same incoming tract of nerve fibres is, so to speak, switched up with different groups of muscle centres at different times. This regulation is an extraordinarily fine one, a fact which is of fundamental importance in

regard to our conceptions as to the function of the central organ. As a consequence we must recognise that the cord changes with and mirrors every change in position of the limbs or other parts of the body. To every position of the body there corresponds a definite distribution of excitabilities and readily accessible avenues in the central nervous system, and this distribution is arranged by the body itself.

The experiments on the tail of the spinal cat (second communication) likewise confirmed v. Uexküll's statement. The experiments both on the limb and on the tail reflexes are illustrated by cinematograph pictures. JOHN TAIT.

**CRITICAL OBSERVATIONS IN REGARD TO RECENT WORK
(64) ON THE SENSIBILITY OF ABDOMINAL ORGANS.**

(*Kritische Bemerkungen zu einigen neueren Arbeiten über die Sensibilität der Bauchorgane*). GUNNAR NYSTRÖM, *Mitt. a. d. Grenz. der Med. u. Chir.*, Bd. 21, Heft. 1.

THE extensive researches of Lennander on the sensibility of intra-abdominal structures led him to the conclusion that although the parietal peritoneum was very sensitive, the abdominal viscera under normal conditions were insensitive to touch, heat, cold, pain, and pressure, and in handling the viscera pain was only experienced when traction was made on the retro-peritoneal tissues through a mesentery or ligament. He concluded that within the abdomen painful sensations were transmitted entirely through the spinal and to no extent through the sympathetic nerve paths.

Of late Lennander's views have been stoutly contested by several observers, notably by Melzer and Kast and by Ritter. The former observers opened the abdomens of animals under general anæsthesia, then allowed the animals to come out of the anæsthetic, when they found that the intestines were sensible to pain. In experiments where they used local anæsthesia (cocaine) for the abdominal incision the intestines were insensitive.

Ritter's work did not confirm these facts, but showed that ligature of mesenteric blood-vessel invariably elicited pain, and that highly vascular parts of the viscera were sensitive to pain.

Nyström's observations, made both on the human being and on animals, do not confirm the results of these later writers, but, on the contrary, uphold Lennander's views that the viscera themselves are insensitive to pain.

The pain experienced in intestinal colic is, he maintains, due to traction on the mesentery, and the pain in gastric ulcer to the coincident lymphangitis and lymphadenitis in the retro-peritoneal lymphatics. D. P. D. WILKIE.

THE CONDITIONS OF FATIGUE IN THE NERVOUS SYSTEM.

(65) WILLIAM M'DOUGALL, *Brain*, Part 127, Vol. xxxii., 1909, p. 256.

ATTENTION is drawn to certain familiar features of the symptoms of fatigue which indicate that they are always the expression of a diminution of the quantity of free nervous energy (*neurokyme*) in the central nervous system, in proportion to the resistances that have to be overcome by it, the symptoms being produced either by diminution of the output of energy or by an increase of the resistances, and being abolished by changes of the opposite kinds.

Verworn's scheme of the conditions of fatigue is accepted as true so far as it goes, but as too simple to account for the facts; and it is argued that it must be supplemented by the acceptance of three important notions:—

(1) The notion of the synapses as seats of resistances of variable degrees, which resistances restrict the spread of nervous excitation in the central nervous system and mark out the paths that it must follow. These synaptic resistances must be regarded as liable to be raised by (a) the process of transmission of the impulse across the synapse, (b) the presence of waste product of metabolism.

(2) The notion of liberated nervous energy (*neurokyme*) flowing from the parts of the nervous substance in which it is liberated, through and to other parts, in the main in the efferent direction, i.e. the notion of vicarious usage of nervous energy.

(3) The notion of certain special sources of supply of *neurokyme*, namely, the innate or instinctive psycho-physical depositions, any one of which, when excited in any way, may liberate so large a quantity of *neurokyme* as to abolish all symptoms of a moderate degree of fatigue.

It is suggested that the scheme of the conditions of fatigue thus reached may help us in forming clearer notions of some of the disorders of the nervous system, especially hysteria and neurasthenia.

AUTHOR'S ABSTRACT.

PSYCHOLOGY.**THE ATTITUDE OF PSYCHOLOGY TOWARDS TROPISMS. (Les**

(66) *Tropismes devant la Psychologie.*) CLAPARÈDE, *Journ. f. Psychol. u. Neur.*, Bd. xiii., S. 150.

PROFESSOR CLAPARÈDE, with the clearness and sanity that distinguishes all his writings, gives here an excellent discussion of the subject of tropisms from the point of view of the psychologist. He first deals with the question of definition. Some writers, as

Nuel, have defined tropisms as "reactions of living beings into which no psychical factor enters."

This is evidently too wide, for, according to those who accept the principle of psycho-physical parallelism, it would include all possible living reactions. Verworn, Loeb, and others define tropisms as "reactions of orientation, in which the body moves either towards or away from the stimulus." This is also too wide, for by it the audience facing a lecturer would manifest a tropism. Some certain *kind* of orientation must be meant. The same authors find the criterion of the necessary kind of orientation in the fact of its following an *unequal* excitation, thus causing an asymmetry of movement. But a man's movement towards a friend whom he meets on the street is an orientation following an equal or unilateral excitation.

Bohn and many others maintain that a tropism is the response to an irresistible stimulus. The determinist would oppose to this the objection applicable to Nuel's definition, namely, that strictly speaking it applies to all reactions. Pursuing this point, however, Claparède from a biological point of view makes a distinction between (*a*) reactions that are in accord with the interest of the moment, *i.e.* that occur with the organic consent of the animal, and (*b*) those that are independent of this interest, such as, for instance, the movement of a muscle in response to faradism. The physiologists, however, would not restrict the term tropism to the latter class, for the phenomena described under that name are in no sense necessarily stereotyped and invariable reactions, but depend on what Jennings calls the physiological state of the organism, its age, state of fatigue, etc. This "physiological state" is only the physical basis of Claparède's "interest of the moment." Claparède here remarks that the reason why so many observers have found this variableness a strange and curious phenomenon is because it, like many others, evokes no clear image when physiologically expressed (tropisms vary according to physiological states), while, when psychologically formulated, it is seen to be a vulgar banality (the acts of an animal vary according to its needs). Of course many tropisms are reactions of an invariable nature, but so are many reactions of the higher animals. When a man is thrown out of a window and falls to the ground, one does not speak of a geotropism, nor does one conclude therefrom that man has no psychical life and is only the plaything of external physical forces; it only proves that some of man's reactions occur without his "organic consent." In this connection Claparède remarks how difficult it is from a physiological point of view to distinguish between an attraction with consent and forced attraction, because the physiologist tends to regard the stimulus and the result as isolated phenomena, and not to consider the organism as a whole.

One dog is attracted by a plate of soup, another, clothed in iron, by a powerful magnet. To the physiologist, watching the phenomena from without, both cases are of the same nature. To the psychologist, concerned with the point of view of the individual, there is a world of difference between them. Yet it is difficult to express this difference in the new language of tropisms, anticlises, and other kineses. The subjection of an animal to an external force is often only apparent, and does not allow one to infer a "tropismity" in the movement. A dog who follows a lump of sugar towards the right or the left is not manifesting a "saccharotropism," he is merely following the line of his greatest interest. Even in the case of the lower animals many instances, *e.g.* of heliotropism, may be of the same nature and may correspond with complex needs and interests of the organism.

Claparède then expounds his own conception of tropisms, founded on consideration of the part played by the stimulus. A given stimulus may act in one of two ways: either as an *agent*, analogous to the ringing of a bell by a pull at the wire, or as a *signal*, analogous to the ringing of a bell by pressing an electric button; in the first case there is a relation between the energy of the stimulus and that of the reaction, in the second case no such relation exists, for an intermediate mechanism intervenes. Now in the actual descriptions of tropisms given by physiologists there is nothing to recall the simplicity and precision implied by the idea of tropisms as due to a local modification of the animal protoplasm at the seat of stimulation. On the contrary, between the reaction and the excitation a certain independence is observed, which is precisely one of the characteristics of reactions in which the stimulus acts as a signal. Besides, the conception of tropisms commonly accepted fails to account for the activities supposed to be of this nature. Thus Loeb describes as a "positive heliotropism" the action of climbing trees carried out by certain caterpillars when in a fasting state. But, as Wasmann has remarked, if this were the explanation, then the unfortunate animals would perish of starvation after their first meal, for, being at the top of the trees, the positive heliotropism operative in their next hungry mood would prevent them from descending so as to climb other trees. Again, an animal placed in a generally unfavourable environment would not move at all, being not subjected to "unequal excitation," whereas, in fact, he behaves just as we would under similar circumstances—that is to say, he wanders to and fro experimentally trying all modes of escape.

What has especially seduced those who seek to explain various activities as tropisms is the hope of thus filling the gap that exists between the animal and vegetable kingdom, and so of satisfying our life of uniformity. It is, in fact, botany that gave us the

notion of tropisms, but in that science it no longer seems to thrive. Botanists have remodelled their conceptions of it, and while zoologists attempt to bring animals down to the level of plants, botanists, on the contrary, are trying to raise plants to the level of animals. The two are sure to meet, but there seems much more reason for assimilating plants to animals than animals to plants. After citing some passages from modern botanists, Claparède adds: "Il m'a semblé qu'il était assez piquant de rapprocher ces déclarations de celles des zoologistes. Tandis que ceux-ci ne voient dans les actes des animaux que simplicité extrême, ceux-là au contraire s'efforcent de prouver que les réactions des plantes sont dues à des "machineries" infiniment compliquées et dont on est loin encore d'avoir mis à jour le mécanisme! La conclusion de tout cela, c'est que rien dans les actes des animaux inférieurs, — et pas même le désir bien légitime pour un physiologiste de vouloir les assimiler aux mouvements des plantes—ne nous oblige à les considérer comme étant de nature spéciale, comme étant distincts autrement qu'en degré des actes des animaux supérieurs."

From his sceptical criticism of over-rash inferences on the subject Claparède in no way concludes that the idea of tropism is one without value for biology. On the contrary, he considers that tropisms, in the sense above defined, are the primary and fundamental phenomena of all life, and that the aim of comparative psychology should be to trace the development and evolution of them into the more complex forms of psychical activity. His last remarks on this subject should be read in conjunction with his admirable defence of comparative psychology in general (*Rev. philosoph.*, mai 1901; *Arch. de psychol.*, t. v., 1905).

ERNEST JONES (Toronto.)

PATHOLOGY.

ON THE GENESIS OF LESIONS OF THE SPINAL CORD IN A (67) CASE OF RAPIDLY DEVELOPING SYPHILIS OF THE CENTRAL NERVOUS SYSTEM. (*Sur la genèse des lésions de la moelle épinière dans un cas de syphilis du névraxe à marche rapide.*) ALQUIER, *Nouv. Icon. de la Salpêtrière*, July-August 1909, p. 368.

A CASE of acute syphilitic myelitis gave the reporter an opportunity of examining the lesions in the cord before they had become complicated by secondary changes, and enabled him to discuss the value of the different views put forward to explain the destruction of nerve elements in spinal syphilis. The meninges were slightly thickened, with slight small-celled infiltration round some of the

meningeal vessels, none of which, however, was obviously either stenosed or obliterated. Numerous foci of myelomalacia were found scattered throughout the cord. The posterior columns in their whole extent were involved, with the exception of a thin band skirting the edges of the posterior horns; irregular areas of disease were also present in the lateral columns and in the anterior columns; in fact, the irregularity of the affected areas was their most characteristic feature. In these foci most of the fibres were œdematous; the neuroglia was granular, and its fibres difficult, if not impossible, to distinguish. The motor cells of the anterior horns were also affected, specially in the dorsal, upper lumbar, and lower cervical regions. In most of the affected spots the endothelium of the smallest blood-vessels was found to be swollen, and the lumen of some seemed obliterated. According to the author, this degree of vascular change is quite inadequate to explain the widespread œdematous necrosis, which, moreover, corresponds to no accepted vascular distribution. He considers it has been caused by syphilitic toxins, no doubt carried by the circulation, but offers no hypothesis for the actual genesis of the islets of disease.

[As far as can be judged by the photographs, the pathological condition bears a striking resemblance to that of subacute combined degeneration of the cord, and the reviewer suggests that this diagnosis is at least a possible one, judging from the clinical history and the fact that ten years elapsed between the chancre and the appearance of the disease.]

S. A. K. WILSON.

CAUSE OF CONTRACTURES AND SPASTICITY IN CASES

- (68) **SHOWING NO DEMONSTRABLE LESION OF THE PYRAMIDAL TRACTS, WITH A PATHOLOGICAL REPORT OF THREE CASES.** RHEIN, *Journ. of Nerv. and Ment. Dis.*, Dec. 1909, p. 720.

AFTER giving a short account of the various hypotheses that have been invoked to explain post-hemiplegic contractures, Rhein describes three cases in which motor systems were found on autopsy to be intact. Lesions were, however, present in different sensory regions of the brain, and Rhein attributes to these the occurrence of the contractures.

ERNEST JONES.

A CASE OF MYASTHENIA, WITH AUTOPSY. (Un cas de

- (69) **myasthénie grave d'Erb-Goldflam, avec autopsie.)** LAIGNEL-LAVASTINE and BOUDON, *Nouv. Icon. de la Salpêtrière*, July-August 1909, p. 432.

THE pathological findings are interesting. The thymus was persistent and greatly enlarged. The cells of the anterior horns were

normal, and sections from various areas of the cerebral cortex were similarly negative. In the muscles examined (sternomastoids, thyrohyoids, and muscles of the pharynx) numerous lymphocytic infiltrations were found. The structure of the fibres was unchanged. Some of them, however, showed collections of proliferated nuclei in the interior of the fibre, at which points the transverse striation was no longer visible. Several fibres gave indications of splitting into smaller fibres by longitudinal fissuring. Fibrous metamorphosis of short muscle fibres was strikingly apparent in some sections stained by hæmatoxylin—van Gieson. Examination under a high power, and with suitable stains, revealed the interesting fact that a proportion of the cells in the infiltrates presented all the characteristics of Ehrlich's *mastzellen*. The pituitary was very vascular and engorged with blood. The thyroid, similarly, was in a condition of functional hyperactivity.

S. A. K. WILSON.

CLINICAL NEUROLOGY.

THE POLYNEURITIS OF PREGNANCY. (*La polynévrite gravidique*.) DUSTIN, *Nouv. Icon. de la Salpêtrière*, July-August 1909, p. 348.

A YOUNG woman, aged 30, was seized, at about the sixth month of pregnancy, with intractable vomiting, and about a fortnight later a dead foetus was expelled. At the same time symptoms of a profound degree of toxæmia appeared, in the shape of myocarditis, albuminuria, paralysis of the lower extremities, rapidly advancing muscular atrophy, intense pains and tenderness in the limbs, and incontinence of urine and fæces. All the deep reflexes were lost. In less than a month bed-sores appeared, and at the end of two months the patient died from myocarditis, little or no improvement having taken place in the nervous symptoms. Up to the end there was practically no change in sensibility. A diagnosis of toxic polyneuritis was made, and amply confirmed by subsequent examination of the tissues. Many of the motor cells of the anterior horns of the cord were in a condition of acute vacuolation. The mixed nerves (*e.g.* the sciatic) supplied the characteristic picture of neuritis, with degeneration of the axons on the peripheral side, and in some instances with commencing regeneration from the central ends.

S. A. K. WILSON.

ON ACUTE POLIOMYELITIS. (*Über Poliomyelitis acuta.*) HOCH- (71) HAUS, *Münch. med. Woch.*, No. 46, 1909, p. 2353.

AFTER a sketch of previous epidemics, Hochhaus records three personal cases from the outbreak in Rhenish Westphalia in 1909.

Two ran a fulminating course, death occurring within two days of the onset. In both the clinical picture was more like acute meningitis than poliomyelitis. In the first case, in addition to characteristic lesions in the cord, there was definite inflammation of the cerebral pia. In the second case measles had occurred four weeks previously, and the child had not been quite well since.

Cerebral and bulbar lepto-meningitis was found at the autopsy, as well as the spinal lesions.

The third case was in a boy, aged 11 months, in whom the disease developed on the day following vaccination (*cf. Review*, 1907, p. 789).
J. D. ROLLESTON.

EXPERIMENTAL INVESTIGATIONS ON ACUTE POLIOMY-

(72) **ELITIS.** (*Experimentelle Untersuchungen über Poliomyelitis acuta anterior.*) C. LEINER und R. v. WIESNER, *Wien. klin. Woch.*, Nr. 49, 1909, S. 1698.

THE writers found intracranial inoculation more certain than intraperitoneal, especially in carrying on the disease from one monkey to another. Young animals were found better than adults of the same species. There appeared to be no change in the virulence or incubation period in transference through several generations of monkeys, the incubation period varying between six and ten days. They did not succeed in transmitting the disease by inoculation of cerebro-spinal fluid, blood, or spleen juice. The virus seemed to be removed by passage of the emulsion through a filter, but on this point further observations are required.

In animals the onset of the disease is usually sudden, but without fever; the extension of the paralysis is rapid. Types analogous to those found in man occurred, viz., purely spinal cases, spinal paralysis associated with peripheral paralysis, and bulbar cases. They failed in attempts to transmit the disease to animals other than the lower monkeys. They regard the various cocci which have been found by different authors in this disease as accidental impurities.
J. H. HARVEY PIRIE.

ACUTE ANTERIOR POLIOMYELITIS. (*Zur Kenntnis der Polio-*

(73) **myelitis anterior acuta.**) J. K. FRIEDJUNG, *Wien. med. Woch.*, No. 39, 1909, p. 2311.

A BOY, aged 2½ years, on the fourth day of a febrile attack developed flaccid paralysis of the left deltoid triceps and biceps,

followed by atrophy. Four months later paresis of both legs supervened, with pseudo-hypertrophy of both calves.

Five other cases have been recorded in literature of intermittent poliomyelitis characterised by two, and in one instance by three, attacks of paralysis, with an interval ranging from two weeks to three months between each seizure. Pseudo-hypertrophy of the paralysed muscles in infantile paralysis was noted by Seeligmüller in 1880, and later by Strümpell, Oppenheim, von Leyden, and Goldscheider.

J. D. ROLLESTON.

ACUTE ANTERIOR POLIOMYELITIS. T. E. GREEN, *Intercol. Med.* (74) *Journ. Austral.*, 1909, p. 197.

GREEN records two fatal cases from the 1908 epidemic in Bendigo.

1. Boy, aged 5 years. Death on eleventh day from respiratory paralysis. The striking features in this case were intense meningeal symptoms at the onset, soreness of the muscles of body and limbs not confined to the muscles subsequently paralysed, and gradual extension of the paralysis after subsidence of the temperature.

2. Boy, aged 6 months, breast-fed. Paralysis of both arms and legs. Death on ninth day from pneumonia.

J. D. ROLLESTON.

A PERSONAL EXPERIENCE WITH ACUTE ANTERIOR POLIOMYELITIS. R. T. BARNETT, *Therap. Gaz.*, Sept. 1909, p. 627.

FROM June to September 1908 an epidemic of acute poliomyelitis visited Lewistown in Pennsylvania. Thirty cases were reported, with three deaths. One of the fatal cases was a woman, aged 18, and another a boy, aged 4, in whom death was due to respiratory paralysis. The only instance of more than one case in a family occurred in Barnett's own children. His son, aged 8 years, on the third day of a severe febrile attack, characterised by high temperature, severe headache, vomiting, delirium and stupor, developed paresis of the extensors of the right leg. Under tonic treatment and massage complete recovery took place within six weeks. Four days after the onset of the boy's attack, his sister, aged 2½ years, awoke in the morning with paralysis of both arms and of the extensors of the right leg. Severe pain, which continued for two or three weeks, was felt in the affected limbs and down the spine. A fortnight previously she had suffered from cerebral concussion due to a fall, but had completely recovered therefrom. A few days before the onset of the paralysis she had had some slight gastric and intestinal disturbance. Though the constitutional symptoms

were much less severe than in her brother's case, the resulting paralysis was much more extensive and permanent.

J. D. ROLLESTON.

THE EARLY TREATMENT OF ACUTE POLIOMYELITIS. (Zur (76) *Behandlung des Frühstadiums der Poliomyelitis anterior acuta.*) G. HOHMANN, *Munch. med. Woch.*, Nr. 49, 1909, p. 2508.

THIS is merely a brief note recommending the use of a plaster of Paris jacket in the early acute stage of poliomyelitis, in order to keep the vertebral column, and with it the spinal cord, at as complete rest as possible.

J. H. HARVEY PIRIE.

A NEW CASE OF EPIDEMIC POLIOMYELITIS. (Un nouveau (77) *cas de poliomyélite épidémique.*) A. NETTER, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, xxviii., 1909, p. 629.

A BOY, aged 2 years, developed flaccid paralysis of both legs, the left arm and neck muscles, and left facial palsy. The paralysed limbs were painful, but there was no vertebral nor nuchal rigidity. In opposition to Lhermitte, Netter points out that painful phenomena, which are the rule in epidemic poliomyelitis, are far from exceptional in classical infantile paralysis, and alludes to the descriptions of the disease given by Heine in 1840 and 1860, and by Roger and Damaschino in 1871 and 1881.

J. D. ROLLESTON.

AN EPIDEMIC OF ACUTE POLIOMYELITIS. W. W. TREVES, (78) *Brain*, Nov. 1900, p. 285.

THIS is a good record of a small epidemic of eight cases which occurred in an Essex village in the summer of 1908. None of the cases were fatal; in six of them there were first constitutional symptoms, and then a few days afterwards they became paralysed; one child had fever, but developed no paralysis; while one was paralysed without any constitutional disturbance. The legs were the most commonly affected by the paralysis; in no case was there any definite evidence of polio-encephalitis. All the children were over six years of age except one, who was three and a half years old. As regards the incubation period of the disease, where it could be ascertained it was under six days. Three of the cases were in one family and two in another, but all attempts to trace the means by which the disease spread failed. Details of the individual cases are given.

J. H. HARVEY PIRIE.

INFANTILE PARALYSIS. H. DAVIS, *St Paul Med. Journ.*, 1909, (79) p. 630.

THE recent epidemic of two hundred cases in St Paul occurred during the period of greatest summer heat. In more than half the cases stomach or bowel troubles preceded the paralysis. Nuchal rigidity occurred in all the severe and in many of the mild cases. Neuritic pains were constant and severe. One quarter of the cases had ocular or facial paralysis. Most of the cases of leg palsy had paralysis of the upper limbs and of the bladder as well. All the deaths which Davis had seen were due to respiratory paralysis. There were some extremely mild cases, whose only symptoms were slight digestive troubles, apathy, somnolence, and pain on movement in the arms or legs, and who recovered without paralysis in from three to six days.

J. D. ROLLESTON.

THE EARLY STAGES OF INFANTILE PARALYSIS. (Ueber die (80) Frühstadien der spinalen Kinderlähmung.) E. MÜLLER, *Münch. med. Woch.*, No. 48, 1909, p. 2460.

THIS paper is based on the study of fifty cases by Professor Müller of Marburg in the recent epidemic of poliomyelitis in Hesse-Nassau. The disease, as Wickman had found, showed a predilection for certain villages, streets, and groups of houses. There was no evidence to show that infection was conveyed through food or vermin; but it was apparently transmitted from person to person, and frequently by healthy "carriers." The incubation period was at least five days, and, as a rule, about a week. Intestinal symptoms, which were present in about two-thirds of the Westphalian cases, were exceptional in Müller's experience. Very frequently there was initial angina, bronchitis, or even bronchopneumonia. Very many cases occurred in which there was no definite paralysis; often there was only loss of the tendon reflexes or muscular hypotonus without coarse paresis. A striking instance of the co-existence of abortive and fulminating cases in the same family occurred in the case of a mother and her child, who were both taken ill with angina. The mother rapidly recovered, but the child died with signs of Landry's paralysis. In spite of the great variety of the prodromal symptoms, Müller thinks it possible to make a correct diagnosis before the appearance of paralysis, from the presence of three cardinal symptoms—profuse perspiration, hyperæsthesia, and leucopenia. Other important symptoms were weakness of the abdominal muscles, meteorism, and loss of the abdominal reflex. He often found a disproportion

between the severity of the initial symptoms and the subsequent paralysis, a violent onset being followed by an almost complete absence of palsy, and *vice versa*. Severe meningeal symptoms, especially nuchal and vertebral rigidity, were rare, as were also convulsions, delirium, and loss of consciousness. Pontine and bulbar phenomena were frequent. Herpes was rare, but other eruptions were often seen. Lumbar puncture always showed a clear fluid under hypertension, with lymphocytes, but without any microbes in the sediment. Müller is convinced that the virus enters the system through the respiratory and intestinal tracts, and thinks it possible that, like that of rabies, it passes along the nerve lymphatics into the spinal subarachnoid space, and thence along the lymph sheaths of the spinal vessels, especially those of the central arteries.

J. D. ROLLESTON.

THE NEW DISEASE: EPIDEMIC PARALYSIS. C. R. BALL, *St (81) Paul Med. Journ.*, 1909, p. 619.

BALL suggests epidemic paralysis as a name for the disease hitherto known as infantile paralysis or acute anterior poliomyelitis. The term infantile paralysis is unsuitable, because the disease in an epidemic form frequently attacks older children and adults, in whom it is more severe than in infants, while the term anterior poliomyelitis is too narrow for a disease which presents so many different types.

Ball records seven atypical cases, three of which ran a fulminant course, death from respiratory paralysis taking place within a few days of the onset. In two babies the disease was manifested by the occurrence of facial paralysis, associated in one case with paralysis of the external rectus of the opposite side. In a girl, aged 17 years, the right sixth nerve was the only one involved. The last case was that of a woman, aged 38, who had no paralysis, but only severe headache and pain in the back of the neck. Ball found that abortive cases were very frequent during the epidemics, and thinks that many such cases are not seen by doctors at all. According to him the text-books are wrong in stating that the sphincters are not involved, since he met with many cases of retention in which catheterisation was necessary for several days. Pain and tenderness along the affected nerve trunks, he considers, are much greater than has been taught, but whereas in multiple neuritis the tenderness is most marked in the distal parts, in epidemic paralysis the proximal parts are most affected. As regards treatment, absolute rest in bed is most important, and should be enforced, even in mild cases, for several weeks. In the fatal cases the patients took a varying degree of exercise after the onset of the disease (*cf. Review*, 1908, p. 709).

J. D. ROLLESTON.

INFANTILE PARALYSIS IN RHENISH WESTPHALIA. (Die (82) *akute spinale Kinderlähmung im rheinisch-westfälischen Industriebezirk.*) RECKZEH, *Med. Klinik*, No. 45, 1909, p. 1704.

THE epidemic of cerebro-spinal meningitis in Rhenish Westphalia had hardly subsided when an outbreak of acute poliomyelitis occurred in several districts. The epidemic rapidly spread, so that by November there were five hundred cases. In the Arnsberg district the disease was made notifiable. Faucial inflammation was an initial symptom in many cases, and during the first few days of the disease many patients suffered from nuchal rigidity, headache, and convulsions. Intestinal symptoms, such as constipation or diarrhoea, were often present in the early stage. It is thus obvious that an accurate diagnosis was usually impossible during the onset, as there was nothing to indicate a spinal affection. The blood, as in typhoid fever, showed a diminution of the white cells, with a relative increase of the lymphocytes. The cells in the cerebro-spinal fluid were scanty and almost exclusively lymphocytes. Of ninety-three cases in the Bochum district, seventeen died—a mortality of 18·2 per cent. The care required in prognosis is illustrated by the following case:—A girl, aged 8 years, after a mild prodromal stage developed flaccid palsy of both legs. Her general condition was excellent, and all the organs, especially the heart, appeared healthy, when, without any warning, death suddenly occurred on the second day, being probably due to action of the toxins on the heart muscle.

J. D. ROLLESTON.

ASSOCIATION OF INFANTILE PARALYSIS AND MENINGEAL

(83) **REACTION.** (*Association de la paralysie infantile et des réactions méningées.*) P. NOBÉCOURT and R. VOISIN, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, xxviii., 1909, p. 550.

A RECORD of two cases observed in July and August 1909.

1. A boy, aged 4 years, was suddenly seized with malaise and paralysis of the lower limbs. This was followed by headache, pains in the limbs, contracture of the dorso-lumbar muscles and extension of the paralysis to the upper limbs. In a few days the pains and contractures disappeared, and movement returned in the upper limbs, while the paralysis persisted in the lower limbs. Lumbar puncture performed on the fifth day gave issue to a turbid fibrinous fluid, rich in albumin, and containing numerous lymphocytes but no microbes.

2. A boy, aged 8 years, was seized with fever and severe pain in the thighs, followed by flaccid paralysis of the lower limbs. The cerebro-spinal fluid was clear, rich in albumin, and contained numerous lymphocytes but no microbes. J. D. ROLLESTON.

INFANTILE PARALYSIS WITH MENINGEAL REACTION.

- (84) (*Paralysie infantile avec réaction méningée.*) L. GUINON and L. G. SIMON, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, xxviii., 1909, p. 625.

A RECORD of two cases observed during the recent epidemic of poliomyelitis.

1. Boy, aged 5½ years. Sudden onset with fever and paralysis of the lower limbs. Subsequently the paralysis disappeared from the left but persisted on the right side. The meningeal symptoms consisted of contracture of the neck and back muscles, the meningeal streak and abundant cerebro-spinal lymphocytosis.

2. Boy, aged 19 months. Febrile onset followed by right facial paralysis and right internal strabismus, Kernig's sign, and cerebro-spinal lymphocytosis. The writers think that syphilis and tubercle could be excluded.

J. D. ROLLESTON.

TRANSMISSION OF INFANTILE PARALYSIS TO MONKEYS.

- (85) (*La transmission de la Paralysie infantile aux singes.*) K. LANDSTEINER et C. LEVADITI, *Compt. Rend. de la Soc. de Biol.*, Dec. 3, 1909, p. 592.

THE authors succeeded in producing typical acute poliomyelitis in a chimpanzee by intra-peritoneal injection of emulsion of cord substance from an acute case obtained in Vienna. The virus had kept its activity during the four days which elapsed before inoculation. They also succeeded in secondary transmission to lower monkeys. The pathogenic agent appears to show a preference for the nerve-cells, in which it causes destruction; once destroyed, they rapidly disappear by phagocytic action. The lesions of experimental poliomyelitis are strikingly similar to those of rabies, but they found no Negri bodies in the horn of Ammon.

J. H. HARVEY PIRIE.

TWO CASES OF TABES DIAGNOSED BY RADIOGRAPHY.

- (86) (*Deux cas de tabes dorsal diagnostiqués par la radiographie.*) Dr BIENFAIT (of Liège), *Journ. de Neurol.*, Nov. 5, 1909, p. 401.

THE main object of this paper appears to be to lay stress on the importance of rarefaction of the bones and of the loss of deep sensibility as symptoms of tabes. Prof. Grasset, in particular, lays great stress on the latter symptom. The first case was that of a workman who had his foot severely crushed by a weight falling on

it. He complained of practically no pain, but X-rays showed great rarefaction of the bones and complete smashing up of the greater part of the tarsus. The patient had no muscular atrophy, no Rombergism; the knee jerks were present, though faint; the Achilles jerks were lost, and he had Argyll-Robertson pupils. Tactile sensibility was practically normal, but deep sensibility (of tendons, bones, testicle, trachea, etc.) was almost everywhere markedly deficient.

The second case was that of a man with rheumatism, whose left thumb was found on X-ray examination to have been the seat of a painless dislocation; the bones of both hands show a slight degree of osseous atrophy. Further clinical examination revealed loss of knee and Achilles jerks, slight Rombergism, no incoordination, no disturbance of gait, cutaneous sensibility slightly impaired in places, no crises, considerable loss of deep sensibility in many parts of the body.

J. H. HARVEY PIRIE.

AN UNUSUAL TYPE OF SYRINGOMYELIA. LESZYNSKY, *Journ.*
(87) *of Nerv. and Ment. Dis.*, Dec. 1909, p. 710.

THE special feature of the case reported was the restriction of symptoms to sensory disturbances.

ERNEST JONES.

MENINGOMYELITIS SIMULATING A TUMOUR OF THE SPINAL
(88) **CORD.** (*Meningomyelitis unter den Bilde eines Rücken-*
markstumors.) KURT MENDEL (Berlin), *Berl. klin. Wchnschr.*,
No. 50, 1909.

IN the case reported, the symptoms were absolutely identical with those of a tumour of the spinal cord, and an operation was accordingly performed with the object of removing the tumour or the meningitic cyst. There was actually found to exist, however, a hypertrophic dorsal pachymeningitis (probably of a syphilitic nature), which had extended to the other membranes and to the spinal cord, where it had given rise to severe inflammatory changes.

From this case we may draw the following indications:—

1. If there is any suspicion of a tumour of the spinal cord, the appearance of a Brown-Séquard syndrome in an indefinite, atypical form makes it probable that the morbid process is either wholly or in part an intramedullary one, and that it is therefore not accessible to operation. Finally, we should always remember the possibility of a spinal syphilis or specific meningomyelitis, and

try to obtain improvement or recovery by an intensive mercurial treatment.

2. Inconstant disorders of sensibility, varying in intensity, situated above marked and constant sensory symptoms, are due to obstruction of the fluid above the tumour in the cord. They must be interpreted in this way when the level diagnosis of the tumour is being considered (the tumour itself lying lower down).

3. *Unilateral* absence of the abdominal reflex, if constantly present, should be regarded as an indication for the level diagnosis (D_8 to D_{12} on the side of the missing reflex). Bilateral loss of the abdominal reflex does not justify any definite conclusions.

4. Pain in the neck and occiput at the beginning or in the course of the disease negatives the presence of a tumour situated low down in the spinal cord, and is an indication rather of an inflammatory meningeal process.

5. There is apparently a *dorsal* hypertrophic pachymeningitis, corresponding to the *cervical* hypertrophic meningitis, which, exactly like the latter, may be due to syphilis, may simulate an extramedullary tumour, and has the tendency to extend into the spinal cord, and in this way to show the pathological condition of meningomyelitis.

AUTHOR'S ABSTRACT.

STAPHYLOCOCCAL MENINGITIS IN SCARLET FEVER.

(89) (*Méningite scarlatineuse staphylococcique.*) E. WEILL and G. MORIQUAND, *Lyon Méd.*, 1909, p. 225.

A BOY, aged $3\frac{1}{2}$ years, whose attack of scarlet fever was complicated by purulent rhinitis, examination of which showed a pure growth of staphylococci, developed meningitis after other signs of secondary infection, such as rheumatism and double otitis media. Lumbar puncture gave issue to a clear fluid without hypertension, containing a few polymorphonuclears but no microbes. The autopsy revealed fibrino-purulent meningitis at the base of the brain, but complete absence of spinal meningitis apart from a small fibrinous mass over the cauda equina. A culture of the meningeal pus yielded a growth of the staphylococcus albus. Though pus was found in each middle ear, there was no lesion to indicate propagation of the inflammation to the meninges. The writers think it more probable that the infection was transmitted through the cribriform plate from the nose.

Most of the cases of scarlatinal meningitis recently published (*v. Review*, 1909, pp. 198 and 199) have been of streptococcal origin. The only other instance of staphylococcal meningitis in scarlet fever was recorded by Legroux in 1905 (*Soc. de Péd.*).

J. D. ROLLESTON.

A CASE OF ACTINOMYCOTIC CEREBRO-SPINAL MENINGITIS.

(90) H. HENRY, *Journ. of Path. and Bact.*, Oct. 1909, p. 164.

A CABINETMAKER, aged 26, developed abscesses of the right upper jaw and neck after a tooth extraction. The typical granules of actinomycosis were found in the wounds and in some very tenacious cerebro-spinal fluid removed one day before death, which took place eleven months after the tooth extraction. At the autopsy the base of the brain and cerebellum were found covered by a yellowish purulent exudate. The whole of the spinal subarachnoid space was distended with thick viscid blood-stained material, which closely invested the cord throughout its whole extent.

Henry has collected twenty-five possible cases of this rare condition from literature. The disease chiefly affects adult males. In each case invasion of the central nervous system has been the determining cause of death. The lungs and bronchial glands are usually the seat of the primary lesion. In only three cases has the infection resulted by direct extension from the neck or face.

In none have cultural or inoculation experiments proved successful. In most cases the diagnosis has been made only by microscopical examination of the pus. J. D. ROLLESTON.

THE DISTRIBUTION OF ENCEPHALIC HÆMORRHAGES. LUD-

(91) LUM, *Journ. of Nerv. and Ment. Dis.*, Dec. 1909, p. 705.

NINETY-THREE cases of cerebral hæmorrhage were investigated. The distribution of the lesions is reported in the light of Beever's recent work on the anatomical distribution of the cerebral arteries. Ludlum finds that lesions of the anterior choroid, posterior communicating, and posterior cerebral arteries occur as frequently as those of the striate group. ERNEST JONES.

A CASE OF BRAIN TUMOUR WITH GENERAL PARALYSIS.

(92) (Ein Fall von Hirntumor bei Paralyse.) RÜHLE (of Schussenried), *Zentralbl. f. Nervenl. u. Psych.*, April 1909, No. 283.

A SPINDLE-CELLED sarcoma in the frontal lobe of a brain showing the typical microscopical changes of general paralysis; owing to the advanced dementia the tumour had not been diagnosed. In the report of the microscopical examination it is interesting to note that the vascular changes in the immediate neighbourhood of the tumour were not so well marked as elsewhere.

C. MACFIE CAMPBELL.

THE RÔLE OF TRAUMA IN THE DEVELOPMENT OF BRAIN

- (93) **TUMOURS.** (*Die Bedeutung des Traumas für die Entstehung von Hirngeschwülsten.*) K. BUCK (of Tübingen), *Zentralbl. f. Nerven- u. Psych.*, March 1909, No. 282.

IN nine out of fifty-one cases of brain tumour in the Tübingen Clinic there was a definite history of trauma; in four cases the trauma had evidently nothing to do with the tumour. In the remaining five cases there appeared to be a connection between the trauma and the tumour; the trauma had occurred before any evidence of tumour; there was a close connection between the site and sequels of the injury and the localisation of the tumour. The cases are reported in some detail.

C. MACFIE CAMPBELL.

PSEUDO-TUMOUR CEREBRI, WITH PATHOLOGICAL REPORT.

- (94) (*Zur Kenntniss der sog. Pseudotumor cerebri mit anatomischem Befund.*) FINKELNBURG and ESCHRAUM, *D. Zeitsch. f. Nervenheilk.*, Bd. 38, 1909, S. 35.

THESE authors record seven cases of pseudo-tumour cerebri, of which the main features are the following:—

Case 1.—Male, aged 20. Gradual onset with headache, at first frontal, later occipital in situation. Diminution of hearing in right ear; diminution of vision, double vision, giddiness, and somnolence. On examination there was found double optic atrophy, without narrowing of the visual fields. Vision, 6/32. Loss of smell; diminution of right corneal reflex. Hyperæsthesia in upper division of right trigeminal nerve. Paresis of right lower facial muscles. Deafness of central type, more marked in right ear. Tenderness on pressure on right occiput. Deep reflexes lively, no extensor responses. No definite cerebellar gait. Treatment by K1 had no effect. Decompressive trephining in right cerebellar region. Death eight days later. At the autopsy no recognisable pathological change; no tumour; no hydrocephalus.

Case 2.—Under observation for eight years. Woman, aged 36, with history of gradual onset of pain in cervical and occipital regions; vomiting; unsteady gait and diminution of vision in right eye. One and a half years after onset of the illness there was right-sided optic atrophy and commencing neuritic atrophy in the left eye, weakness of the left lower face, and left-sided deafness. No increase of deep reflexes. Slight weakness of lower limbs. Sensory functions and sphincters normal. The case improved, and patient only had occasional headache. Left-sided deafness developed, and paresis of the upper limbs.

Case 3.—Under observation for six years. Girl, at the age of 18, began to have right frontal headache, with giddiness, vomiting, and diminution of vision. There was double optic neuritis, slight nystagmus to the left, increase of deep reflexes on left side with extensor reflex on left side. Gait unsteady. K1 without result. After three months gradual improvement of all symptoms, including the optic neuritis. After four years, recrudescence of all symptoms, with double optic neuritis. Then a second remission of symptoms after three months. For last two years patient has been free from all symptoms. There is still double optic atrophy, post-neuritic, with almost normal visual acuity.

Case 4.—Under observation for four years. A child, aged 7, began to have deficient vision in the right eye at the age of three, due to optic atrophy. At the age of four the left optic nerve also became atrophic, and there developed slight headache, dulness, and unsteady gait. Then the symptoms subsided. A year later, after measles, visual acuity rapidly diminished, and there was double optic neuritis; slight nystagmus, but no headache. Puncture of the lateral ventricle on both sides was negative. Two years later there was complete bilateral blindness, otherwise no symptoms; patient intelligent.

Case 5.—Under observation for three years. A boy, aged 13, began at the age of ten, some months after a head injury, to have occipital headache, followed by unsteadiness of gait, occasional rigidity of cervical muscles, diminution of vision, vomiting, and weakness of right arm. Nine months from commencement of illness he had double optic neuritis, diffuse tenderness of skull on percussion, bilateral proptosis, reeling gait, nystagmus to both sides, and slight paresis of the right limbs. Puncture of the lateral ventricles yielded fluid under increased pressure. Gradual improvement followed. A year after the puncture there was still some nystagmus and slight haziness of the margins of the discs; gait normal. For last nine months no symptoms, and optic discs normal. Still distinct nystagmus.

Case 6.—Under observation six years, and at present quite well. A youth of 17 gradually developed left-sided headache, paroxysmal, and often accompanied by nausea, vomiting, and flickering scotomata, occasionally accompanied by paræsthesia in right hand and also in left arm and leg. Two years later there was bilateral early optic neuritis, more marked on the right side. No other abnormality found. K1 had no result. After five months the optic neuritis subsided, and in seven months it had disappeared. The patient has had no symptoms for four years. No more hemicranial attacks.

Case 7.—Under observation for four and a quarter years. A man of 25 gradually developed pains in the suboccipital

region, giddiness, languor, vomiting, mental dulness, and incontinence of urine. Seven weeks from the onset of these symptoms he was found to have a marked cerebellar gait, nystagmus and diplopia to the left, diminution of left corneal reflex, right-sided optic neuritis, mere haziness of left disc, increase of deep reflexes on the left side, with ankle clonus and left-sided extensor response. At first he had numerous attacks of giddiness, with acute headache, vomiting, bradycardia, and absence of knee-jerks for several hours. K1 produced no improvement. After five months' duration of symptoms all the phenomena subsided. For three and a half years he has been free from symptoms and engaged in strenuous occupation as a packer.

The above series of cases suggested in each instance the presence of a tumour in the posterior fossa. Only in the sixth case were cerebellar symptoms absent. PURVES STEWART.

**A CASE OF GUNSHOT WOUND OF THE BRAIN WITHOUT
(95) FOCAL SYMPTOMS.** LESZYNSKY, *Journ. of Nerv. and Ment. Dis.*, Dec. 1909, p. 714.

A BOY of 12 was shot with a revolver. No localising symptoms were present, but radiography revealed the presence of the bullet in the occipital lobe. Operation was contra-indicated. At present, five months after, the boy is in perfect health and attends school daily. ERNEST JONES.

**A CASE OF HYSTERICAL BARKING CURED BY PSYCHO-
(96) ANALYSIS.** (Heilung eines hysterischen Bellens durch Psychoanalyse.) F. CHALEWSKY (of Zürich), *Zentralbl. f. Nervenh. u. Psych.*, May 1909, No. 285.

THE symptom occurred in a girl of 13, and was elicited by the sight of a pool of blood. Analysis disclosed the influence of a fright by a dog several years previously, and of phantasies and dreams based on a recent murder. After the patient had gone over these associations with the physician the symptoms disappeared—the barking cough, the tendency to use the word “bark” for “cough,” the state of anxiety. The author attributes the disappearance of the symptoms to the influence of the psychoanalysis. C. MACFIE CAMPBELL.

THE VISUAL FIELD IN HYSTERIA. WALTER R. PARKER, *Journ. (97) Amer. Med. Assoc.*, July 10, 1909, Vol. liii., p. 91.

THIS research is the result of a perimetric study of cases sent to the ophthalmologist with a diagnosis of hysteria.

The criteria by which neurologists could estimate the validity of its conclusions are unfortunately lacking, for it is not stated on what grounds hysteria was diagnosed by Dr Camp, the clinical professor of neurology at Ann Arbor. In these days when the old notions about hysteria are no longer accepted credulously, the grounds of such diagnosis become an important element in any research regarding hystericals. This is more especially the case since Cushing and Bordley have shown the frequency of inverted or interlaced colour fields in the early stages of cerebral tumour or other causes of high intradural tension. As a matter of fact, Cushing asserts that it is an exception for him to meet with a case of intracranial neoplasm which had not been diagnosed for a time as hysteria, often for months, and sometimes for years.

These facts are doubly significant in that Parker's results show that dyschromatopsia is more frequent than concentrically contracted fields in the proportion of 72 to 40, thus confirming the views of Binswanger and of De Sweinitz as against those of Parinaud and the older French observers.

TOM A. WILLIAMS.

LATENT CHOREA: A CONTRIBUTION TO THE STUDY OF
(98) **SYDENHAM'S CHOREA.** REGINALD MILLER, *Lancet*, Dec. 18, 1909, p. 1808.

By the term "latent chorea" the writer means a condition of mental and physical ill-health, which he regards as the earliest form of nervous rheumatism. It is met with in children in three groups of cases:—(1) Those with obvious acute rheumatism; (2) those convalescent from rheumatism and chorea; (3) in children without any very obvious rheumatic symptoms.

The third group is naturally the most important, owing to the ready failure to recognise the condition and its rheumatic origin, and the loss of a valuable opportunity of preventing severer forms of heart disease. Such a child will be nervous, fidgety, and pale, with a slightly dilated heart, wet hands, and often pupillary abnormalities, although of course all these conditions may be met with in a neurotic non-rheumatic child. The writer's conclusions are: (1) That (rheumatic) chorea declares itself first by symptoms significant of general nervous instability; (2) that in dealing with children suffering from nervous disorders of many kinds, special care should be taken to exclude the possibility of their having originated from a slight rheumatic infection; (3) that the well-known association between rheumatism and nervous instability is not to be explained by considering that the infection is specially prone to attack neurotic children, but by regarding the nervousness as in most cases the outcome of an infection already present

(latent chorea); (4) that the mental depression and headache in rheumatic children are usually to be attributed to the disease and not to its treatment by salicylates; (5) that the recognition of latent chorea in children suffering from obvious acute rheumatism affords strong evidence that chorea is a rheumatic condition.

J. H. HARVEY PIRIE.

ON PARALYSIS AND THE REFLEXES IN CHOREA. JUDSON
(99) S. BURY, *Med. Chron.*, Dec. 1909.

In this paper the history of muscular weakness in chorea, the recent literature regarding the reflexes, and the pathology of these conditions are briefly considered. The author points out that paresis of one arm is common in chorea; it may be the sole expression of the disease, and there is no constant relation between the severity of the choreic movements and the degree of paralysis. As a rule the weakness is slight and transitory; sometimes paralysis is marked. Usually of cortical origin, it may depend on peripheral neuritis, and very rarely on implication of the spinal cord. The latter was the case in the patient observed by the author. A girl, aged 16, suffering from chorea, had almost complete paralysis of the legs and partial paralysis of the arms. The knee-jerks were lost. Four years later there was still paralysis of the dorso-flexors of one ankle. Such permanent paralysis in chorea is quite exceptional, if not unique.

AUTHOR'S ABSTRACT.

PSYCHO-NEUROTIC SEQUELÆ IN THE SURVIVORS OF THE
(100) **COURRIÈRES CATASTROPHE.** (Über psycho-neuropathische Folgezustände bei den Überlebenden der Katastrophe von Courrières am 10. März, 1906.) STIERLIN, *Monatsschr. f. Psychiatr. u. Neurol.*, Bd. 45, Ergänzungsheft, S. 185.

FOLLOWING on the numerous articles in the Italian journals on the psychical sequelæ of the Messina earthquake comes this study of extraordinary interest by Stierlin. It is a contribution of capital importance to the question of the relation of trauma to the psycho-neuroses. In an article 138 pages long the author carefully describes twenty-one cases that were observed from the day of their rescue for a period of two and a half years. In formulating his conclusions he is aided by having made on the spot similar studies immediately after the catastrophes of Messina and Valparaiso, and he relates in addition his experiences of these. The psychical trauma after the Courrières catastrophe was compli-

cated by the presence of physical factors, such as coal-gas poisoning, starvation, etc. In fact, one of the most valuable parts of the article is an excellent description of carbon monoxide psychosis. It is impossible here to resume such a mass of original observations, and most of the conclusions are mingled in such a detailed way with the case descriptions as to make it difficult to extract them. The article should certainly be read in the original by all those interested in the subject. Of the twenty-one cases only three showed signs of hysteria, the two signs being reduction of the visual field and an increased pulse rate. After Messina the most striking and uniformly made observation was the remarkable rarity of hysteria. Bianchi, the well-known psychiatrist, saw not a single case among the five hundred patients under his care. Stierlin saw two cases, both in old hysterics. The next most remarkable fact was the rarity of depression and of psychical symptoms in general amongst most of the Messina survivors; resignation was the characteristic feature present. Exceptional was the occurrence of a group of symptoms (expectation anxiety palpitation, insomnia, etc.), which Stierlin correctly places under Freud's Angst-neurosis. He concludes by quoting with approval Babinski's statement that "l'émotion, même la plus vive, ne crée pas l'hystérie."

ERNEST JONES (Toronto).

A CASE OF ACROMEGALY. H. KIRKPATRICK, *Ind. Med. Gaz.*, (101) Dec. 1909.

ACROMEGALY is not a common condition and it has been very rarely recorded from India. The case here described by Kirkpatrick, which is beautifully illustrated by photographs and radiograms, is undoubtedly an instance of that disease in a Madrasi woman.

C. J. ROBERTSON MILNE.

A CASE OF INFANTILE GIGANTISM. THIBIERGE and GASTINEL, (102) *Nouv. Icon. de la Salpêtrière*, July-August 1909, p. 442.

THE patient was 52 years old, and about 6 feet 3 inches tall. His voice was eunuchoid, his face devoid of hair, his testicles were undeveloped, his breasts prominent, his pelvis ample like that of a woman. In addition, certain indications of a degree of acromegaly were present (kyphosis and enlarged hands).

S. A. K. WILSON.

- A CONTRIBUTION TO OUR KNOWLEDGE OF GIGANTISM.** (Con-
(103) tribution à la connaissance du gigantisme, avec une étude
complète de l'échange matériel dans cette maladie.) LEVI and
FRANCHINI, *Nouv. Icon. de la Salpêtrière*, July-August 1909, p. 449,
and Sept.-Oct. 1909, p. 566.

THE authors find themselves entirely in accord with the views of Brissaud and others, according to whom gigantism is the acromegaly of adolescence. They report an excellent instance of the disease in a man aged 66 years, 6 feet 6 inches in height, and the subject of hereditary syphilis (ectropium uvæ and persistence of the pupillary membrane of Wagendorff). There existed in his case a combination of mental and physical infantilism, with a high degree of obesity, and with certain atrophies and hypertrophies of skeletal tissue. He presented the following characteristic features of infantile gigantism (Papillault):—

(a) The trunk is normal in proportion; the abnormality is in the length of the limbs.

(b) The lower extremities are proportionately longer than the upper.

(c) The proximal segments are less elongated proportionately than the distal.

(d) The hand and the foot are rather less elongated in proportion to the corresponding limb.

An exhaustive chemical examination of the blood showed changes similar to those that have been described in acromegaly.

S. A. K. WILSON.

- CERVICAL RIB AND ITS RELATION TO THE NEUROPATHIES.**
(104) S. P. GOODHART, *Amer. Journ. Med. Sci.*, Nov. 1909, p. 666.

THE author gives an account of a case he has observed, and reviews the general aspect of the whole question, based on the literature of the subject. The patient he describes, a woman aged 28, had complained of symptoms such as paræsthesia and numbness in the left shoulder and arm since the age of eight. There was then added a certain disability in the left index finger and occasional flexor spasm of the muscles of the forearm. At the age of twenty-four weakness and wasting occurred in the intrinsic hand muscles (L.), resulting in a "main en griffe," and hypæsthesia, involving on the left side the eighth cervical and first dorsal root distribution, was noted. Cold increased both the motor and sensory disability. There was also some atrophy in the left pectoral muscles.

Double (R. and L.) cervical ribs were palpable. There was also well-marked cervical scoliosis, and the X-rays revealed a further

abnormality in the shape of a third left dorsal rib smaller than normal.

At the age of twenty-six a specific infection, followed by numerous secondary symptoms, occurred, and at twenty-eight symptoms similar to the early ones on the left side began to develop in the right hand and arm, and also *in the right leg*, which was paræsthetic and somewhat weak, though no objective sensory disturbance could be detected. Operation was performed and both cervical ribs removed. The lowermost roots of the brachial plexus were most involved by pressure from the rib, whilst the upper roots were but little affected. Immediately after operation there was paralysis of the motor and sensory supply of the whole brachial plexus; improvement from this commenced in about a week, but a year after operation there was still "very considerable atrophy with slight sensory changes along the lower forearm on the inner side."

The author does not consider whether the symptoms he describes might be due to a central condition. It seems not impossible that the case might be one of syringomyelia, in which cervical ribs existed as part of a congenital anomaly. The early age at which symptoms developed are strongly against cervical ribs as the essential causative factor; and we have further evidence of abnormality in the scoliosis which existed and also in the presence of an abnormal third dorsal rib. Further, the right leg was involved. Unfortunately the author gives no account of the pupils, nor of the condition of the cranial nerves, nor of the reflexes. It is possible that these, especially the latter, might have thrown valuable light on the question of diagnosis. It is to be noted that no particular improvement was observed in the condition of the left upper extremity one year after operation. The general experience in such cases where the cervical rib is the essential cause of symptoms is that definite improvement can be established by the time a year has elapsed from the operation.

The author gives a useful review of the subject generally, though he has no new fact to contribute. He points out that the cervical rib is a developmental error, in which the processus costarius of the seventh cervical vertebra is abnormally well-developed. The condition is usually bilateral, and more commonly met with in women than in men. The rib may give rise to symptoms: (1) of purely nervous origin—pain, hypæsthesia, etc.; (2) of neuromuscular character, depending on pressure on the lower cords of the brachial plexus; (3) of circulatory troubles, of which the slightest are inequality of the radial pulses, and the most serious aneurysm or thrombosis of the subclavian artery; (4) of purely local character, the presence of a lump in the neck without symptoms.

He rightly lays stress on the importance of a complete examination of the nervous system, as the rib is often a complication of some other neuro-pathological condition, of which syringomyelia is most likely to cause confusion.

Scoliosis is a frequent associated condition, and is usually in the cervico-dorsal vertebræ.

With regard to treatment, the author refers to the difficulty of the operation and the fact that transient paralysis of the whole brachial plexus has been known to follow operation. This, as a rule, clears up within a few weeks, but the reviewer has had a case under observation in which six months passed before material improvement, and of another where permanent serratus magnus palsy occurred, due, no doubt, to division of its nerve, which is particularly liable to injury during removal of the rib. The author lays stress on the necessity of removing both rib and periosteum, as new bone will be formed and symptoms are liable to recur unless the latter are removed.

Within the last week the reviewer has had an opportunity of observing a case in many ways very similar to the one here recorded, a detailed description of which will be published later. In brief, the patient was a young lady, aged 16, who had suffered with symptoms as described in this paper since the age of six or seven. She was sent with the idea that a cervical rib was giving rise to the symptoms, and bilateral cervical ribs were undoubtedly present. This patient had well-marked scoliosis, marked vasomotor disturbance in all four extremities, and ill-defined sensory changes. She had exaggeration of the deep reflexes and double extensor responses, the condition, in all probability, being one of syringomyelia.

C. M. HINDS HOWELL.

**A CASE OF SYMMETRICAL ATROPHY OF HAND MUSCLES
(105) WITH CERVICAL RIBS. FAMILY HISTORY OF CERVICAL RIBS.** F. PARKES WEBER, *Trans. Med. Soc. London*, 1909, Vol. xxxii., p. 394.

THE patient was a well-grown girl, aged 13 years, showing nothing abnormal, excepting in regard to the upper extremities. There was decided wasting of the thenar, hypothenar and inter-metacarpal regions, *i.e.* involving the intrinsic muscles in the right hand, and, to a lesser degree, in the left hand. Electrical examination showed some reaction of degeneration in the muscles of the thenar and hypothenar regions of the right hand. The right hand was weaker and usually felt colder than the left hand. There was hypoesthesia, especially to temperature, on the ulnar side of the right

upper extremity, and (in regard to temperature) over the whole of the right hand. The brachial blood-pressure was rather less in the right arm than in the left. The patient complained of occasional pain in the front of the right arm and forearm. This was first felt about two years previously. The wasting in the hands had not been noticed more than two or three months. A skiagram (Dr Finzi) showed a small seventh cervical rib on each side, but that on the right was the bigger of the two, and its extremity appeared almost to touch the first dorsal rib. Seventh cervical ribs were also found present in the patient's brother and sister, aged eight and twelve years respectively, but the patient was the only one of her family who suffered from the muscular wasting in question. Possibly, however, the brother and sister might later on become affected in the same way. The partial dissociation of sensation, resembling that due to syringomyelia, would be accounted for by supposing that the cervical rib lifted and stretched outwards the first dorsal and possibly the eighth cervical roots of the brachial plexus. By such a dragging on the roots the spinal cord itself (the grey matter) might probably become a little damaged so as to give rise to slight dissociation of sensation.

AUTHOR'S ABSTRACT.

SPECIAL SENSE DISCHARGES FROM ORGANIC DISEASE.

(106) Sir WILLIAM GOWERS, *Lancet*, Dec. 18, 1909, p. 1803.

It is impossible to give any adequate abstract of this Hughlings-Jackson lecture, it is so full of facts concerning the symptoms of epilepsy related to the senses of smell, vision, hearing, and taste, sometimes presented by cases of organic disease, that readers must refer to the original.

J. H. HARVEY PIRIE.

THE NEURASTHENIC AND PSYCHASTHENIC PSYCHOSES.

(107) FROST, *Amer. Journ. of Insanity*, Oct. 1909, p. 259.

Six cases are here reported. No general conclusions are reached.

ERNEST JONES.

PSYCHIATRY.

THE PRACTICAL VALUE OF THE ASSOCIATION TEST. PEARCE

(108) BAILEY, *Amer. Journ. Med. Sci.*, Sept. 1909.

THE theoretical importance of the association test of Jung is now acknowledged, but many physicians have believed it too cumbersome for practical use.

Pearce Bailey reports his experience after a year's use of the test in private neurological practice, and, as a result, he is surprised that it is not more generally adopted. He uses a fifth-second stop-watch, and prefers to have the words read to the patient by a third person. His chart consists of a hundred current words, alternately a noun and adjective, with every fourth word a verb, and with spaces left for the insertion of words specially adapted to the case to be investigated. There is a column for the time required to react, a column for the reaction given, and a final column for the word given when the test is repeated. This is done only in the case of suspicious words, and the second test should be delayed for twenty minutes.

Some striking cases are quoted, particularly one in which there was no lengthening of the association time in a girl suspected of mental unsoundness. Bailey believed that by this negative test he could exclude sexual traumas, paranoid tendencies, and morbid impulses of psychogenetic type, although there was a history of impulses which the friends strongly believed to indicate commencing insanity. Further investigation, instigated by this association test, showed that the child was merely headstrong and had missed judicious parental supervision.

Bailey believes that the test is of little use in cases of the type that the reviewer has called "false neurasthenia." He protests, too, against the sensationalism which has attributed to the test the power of extracting incriminatory information from the unwilling; and he points out, what has so often been forgotten, that an accusation itself creates a complex, the painful feeling tone of which will delay reaction time.

The paper is worth reading, even by those already familiar with the original work of Jung, Petersen, Sidis, etc., and to others it is invaluable as a succinct presentation of a valuable clinical method.

TOM A. WILLIAMS.

ON PERIODIC MUTISM DURING THE REPETITION OF SERIES.

(109) (*Über periodischen Mutacismus beim Reihensprechen.*) A. KNAUER (of Giessen), *Zentralbl. f. Nervenhk. u. Psych.*, 1909, Ht. 5.

THE above symptom was observed in a woman of 39 during her seventh attack of manic-depressive insanity; this attack was a mixed condition, the so-called "manic stupor" characterised by the presence of retardation along with an elated mood. The patient did not speak spontaneously ("mutism of initiative," Wernicke); in answer to questions she spoke slowly, with hesitation and apparently with effort. On the other hand, when asked to repeat any familiar series—alphabet, numerals, months, days, Lord's

Prayer, ten commandments—her expression became rather absorbed, there was no evidence of effort, she appeared rather more cheerful, but remained as a rule mute. This expression persisted during an interval corresponding to the time which the repetition of the series would have taken, and was then quickly replaced by her usual expressionless appearance. If then reminded that she had not carried out the request, she answered in astonishment, "I said it." Occasionally she would speak certain members of the series, the mute intervals corresponding in duration to the times necessary for the repetition of the members omitted.

The author enters upon a psychological discussion of the symptom. The lively internal repetition of the series may have been accompanied by feelings of articulation (Wundt), or hallucinations of the muscular sense, but such are not necessary for the interpretation of the symptom; the psychomotor blocking may have involved the perception of feelings of articulation which in familiar series are usually overlooked.

In the normal individual the clear idea of the speech movement is transformed into the correct speech discharge without special direction of the attention.

The patient probably felt the necessity of straining the attention during this usually automatic process; hence the appearance of great effort during speech. In the repetition of familiar series this feeling of insufficiency was not present, the patient did not therefore realize that even these familiar motor speech images were blocked by the general psychomotor inhibition and were not able to set the speech apparatus in action; she did not, therefore, notice that no peripheral sensations of movement were experienced.

C. MACFIE CAMPBELL.

PSYCHO-ANALYTIC NOTES ON A CASE OF HYPOMANIA.

(110) ERNEST JONES, *Amer. Journ. of Insanity*, Oct. 1909, p. 203.

THIS is an account of the application of Freud's and Jung's methods to a case of manic-depressive insanity, the first instance of the kind published. The psycho-genesis of the symptoms is by these methods traced. No general conclusions are made.

AUTHOR'S ABSTRACT.

MELANCHOLIA IN ITS RELATIONS TO HOMICIDE. G. F. W

(111) EWENS, *Ind. Med. Gaz.*, Aug. 1909.

ASYLUMS in India being state institutions, in which criminal insanes preponderate, it follows that the superintendents have unique opportunities of studying the relations of insanity to crime. Such

contributions to the literature of criminal psychiatry as this of Major Ewens are to be welcomed, and the writer of this abstract, having also had considerable experience of insanity among natives of India, is able to endorse Major Ewens' statements.

Ewens premises his remarks by saying that although it is well-known that melancholics frequently attempt or commit the act of homicide, there is one variety of the disease which especially gives rise to crimes of violence. This variety, which, as he avers, is not sufficiently recognised, occurs apparently with greater frequency in India than in Europe. It is remarkable for the indefiniteness of its symptoms from the point of view of the lay observer, *e.g.* a judge and jury, and it is thus of considerable medico-legal importance. In England and Europe I consider that these men suffering from melancholia with homicidal impulse are sent to asylums long before they have had an opportunity for perpetrating a serious crime: in India the condition of affairs is reversed, for these persons are not sent to asylums until they have committed the crimes of murder or attempted murder, or have shown themselves to be dangerous by acts of aggression.

The clinical history of these cases of melancholia is as follows:—A man—women rarely exhibit this disease—of thirty to forty years of age, who has been previously industrious and temperate, complains of ill-health in an indefinite manner and is depressed in consequence. He neglects his work and the maintenance of his family; he remains at home, eating little and sleeping indifferently; he is unusually quiet; he is very irritable at times when interfered with, and he evinces no interest in anything. He may say that he has a snake inside him, or is possessed by a devil, but, as Ewens states, these are popular beliefs so widespread among the untutored masses in India that it is difficult always to regard them as delusions in the true sense. In this condition the man continues for many months, perhaps for a couple of years. Then one day, after some trifling irritation, he suddenly gets up and kills the person nearest to him, generally a relative, wife, child or parent, “with the first weapon to hand.” He makes little attempt to evade arrest: when questioned about his crime he is apathetic, listless, and may even present some degree of stupor. In this state he may continue for some time, when he will within a few days suddenly recover, ask where he is, why he has been confined there, and other such pertinent questions. It will be found, on examining him, that he has no recollection whatsoever of the events of nearly the whole period of his illness. Such complete recovery, which may extend over many years, is the commonest termination of this disease. In other cases the patient continues permanently in a state of greater or less dejection combined with marked irritability. Relapses occur occasionally in cases which have apparently recovered, and Ewens

is of opinion that such melancholics exhibiting irritability of temper should never be allowed to leave asylums.

In his paper he relates several striking instances of the disease illustrating the above features. As regards the frequency of the condition, his own words may be quoted :—" I have no hesitation in saying that homicide by persons of this class is extremely common. Excluding murders committed by epileptics and those done in the violent excitement of Indian-hemp intoxication, the majority of insane murderers are of this class." Ewens' paper is indeed a remarkable contribution, and worthy of the attention of all who are interested in criminal lunacy.

C. J. ROBERTSON MILNE.

DELUSIONS IN YOUNG PEOPLE, WITH ESPECIAL REFERENCE TO DEMENTIA PARANOIDES. G. F. W. EWENS,
Ind. Med. Gaz., Dec. 1909.

In this paper Ewens discusses the mental disorders of young people in which delusions are a prominent feature. Excluding cases of adolescent mania, especially the toxic form which is so frequently seen in the juvenile disciples of sadhus and fakirs, he states that he has observed a number of cases similar to that form of dementia præcox which has been described on the Continent as dementia paranoides. He describes fully the clinical histories of some of these, pointing out the difficulties in their diagnosis.

C. J. ROBERTSON MILNE.

IMPRESSIBILITY IN DEMENTIA PRÆCOX. RICKSHER, *Amer. Journ. of Insanity*, Oct. 1909, p. 219.

RICKSHER has applied Stern's *Aussage* tests in a number of cases of dementia præcox. He finds that the ability to reproduce the stimuli depends directly on the ability to concentrate the attention and the interest the patient has in the experiment.

ERNEST JONES.

CONTRIBUTION TO THE PSYCHOLOGY OF DEMENTIA PRÆCOX (SCHIZOPHRENIA). (Beitrag zur Psychologie der Dementia præcox.) M. WULFF, *Zentralbl. f. Nervenhk. u. Psych.*, 1909, Ht. 4.

THE psycho-analysis of a case of dementia præcox, by means of which the author was enabled to trace the significance of the peculiar utterances and symbolism of the patient, and to see their relation to the actual difficulties and inner conflicts in the patient's

life. After passing through a period of excitement, and later of catatonic stupor, the patient passed into a condition to which the term dementia is usually applied. The author emphasises the fact that this term is unsuitable; from the socio-psychological point of view the mental efficiency of the patient has deteriorated, but the disorder consists rather in a distortion of the individual psychology rather than in a definite defect such as is found in the other forms of dementia.

C. MACFIE CAMPBELL.

THE DIFFERENTIAL DIAGNOSIS BETWEEN HYSTERICAL (115) INSANITY AND DEMENTIA PRÆCOX; WITH REPORT OF AN ILLUSTRATIVE CASE OF HYSTERICAL INSANITY. DILLER and WRIGHT, *Amer. Journ. of Insanity*, Oct. 1909, p. 253.

THIS is a short and incomplete account of a case in which the diagnosis between the two conditions was especially difficult.

ERNEST JONES.

TREATMENT.

THE DIET IN EPILEPSY. ROSANOFF, *Journ. of Nerv. and Ment. Dis.*, Dec. 1909, p. 716.

GUIDED by Chittenden's experiments on the amount of proteid necessary to health, Rosanoff instituted a series of observations on fifteen cases of epilepsy of old standing. He reduced the proteid intake to a half, and found that, for the seventy days of the experiment, the seizures were reduced in number by 14 per cent.

ERNEST JONES.

OPERATIVE TREATMENT OF GASTRIC CRISES (FOERSTER'S (117) OPERATION). (*Die operative Behandlung gastrischer Krisen (Foerstersche Operation).*) O. BRUNS and F. SAUERBRUCH.

FOERSTER, acting on the belief that the gastric crises of tabes are due primarily to irritation of the sensory nerves of the stomach, recommended division of the seventh, eighth, and ninth dorsal posterior nerve roots as a method of treatment, and he successfully carried out the operative procedure in several cases.

The writers record one case where the crises were of unusual severity, in which this operation was performed with immediate and lasting benefit. Laminectomy was performed, the dura mater laid open, and the seventh, eighth, and ninth dorsal posterior roots

divided on both sides with fine scissors. The dura was then stitched up and the muscles sutured over the bony defect. The gastric crises disappeared, and the patient rapidly put on weight.

They strongly recommend the operation for severe cases with gastric crises where all medical measures have been tried without avail.

D. P. D. WILKIE.

Reviews

A TEXT-BOOK OF NERVOUS DISEASES. By WILLIAM ALDREN TURNER, M.D., F.R.C.P., and THOMAS GRAINGER STEWART, M.B., M.R.C.P. London: J. & A. Churchill. 1910. Price 18s.

THE aim of this book is, in the words of the authors, "to provide the practitioner and senior student with a short and practical account of the diseases of the nervous system. It is not intended to take the place of the large and more complete text-books on nervous diseases." The classification adopted is eminently practical. The book consists of nineteen parts or chapters, the titles of which are as follows:—Anatomy and Physiology; Examination of the Nervous System in a Case of Nervous Disease; Special Senses; Cranial Nerves; Peripheral Nervous System; Diseases of the Brain; Diseases of the Membranes; Diseases of the Spinal Cord; General Diseases; Vasomotor and Trophic Diseases; Familial Diseases; Diseases characterised by Disorders of Muscular Function; Diseases of Obscure Origin characterised chiefly by Disorders of Motion; Migraine and Periodic Headache; Hysteria; Neurasthenia; Psychasthenia; Epilepsy; The Tics.

The necessity for descriptive brevity in a book of this scope is apt to stifle individuality. This cannot be said of the present work, which bears a strong imprint of that judicial discrimination which can only come from extensive clinical experience. The authors have been eminently successful in writing a book which possesses in a marked degree the quality of practical perspective founded upon a basis of personal observation, a feature which is often wanting in a shorter systematic treatise, and which is, at the same time, essential if the book is to prove not only of interest but of true service to the practitioner. The illustrations are admirably reproduced.

EDWIN BRAMWELL.

SELECTED PAPERS ON HYSTERIA AND OTHER PSYCHO-NEUROSES. Prof. SIGMUND FREUD, Vienna. Authorised translation by Dr A. A. BRILL, *Journ. of Nerv. and Ment. Dis.* Monograph Series, No. 4. 64 West 56th Street, New York. \$2.00.

IN 1885 Professor Freud published in *Brain* a paper on "A New Histological Method for the Study of Nerve-tracts in the Brain and Spinal Cord." Since that date none of his writings has appeared in English, and the reviews of his work have for the most part been of a very meagre nature. His classical works on aphasia and on the paralyses of children are of course well known to every neurologist, but his psychological and psycho-pathological writings have not yet been generally appreciated at their true value. The appearance, therefore, of this volume is timely, and is an event of considerable moment in the history of the English literature of psycho-pathology, a literature peculiarly steeped in bizarre superstitions, antiquated philosophy and empty dogmas.

In the past twenty years Freud has for the first time laid the basis of an actual and vital psychology, and has to a remarkable degree wrought into an exact science our knowledge of phenomena that had previously seemed to the last extent meaningless and puzzling. His penetrating dissection of motive, and his untiring patience in making a profound study of the sources of conduct and character, have revolutionised our conceptions of the human mind and its possibilities.

Freud's work in normal psychology took its origin in his extensive studies in the mind of the abnormal, where the deeper trends are from their exaggerated development easier to trace and define. The present volume contains ten selected articles on this subject, which relate to hysteria, the defense neuro-psychoses, and the anxiety neuroses (commonly grouped under the name neurasthenia). More than a quarter of it is taken up with the question of psycho-therapy, and with a description of the psycho-analytic method which he has devised, and which gives such brilliant and gratifying results in maladies that defy all other therapeutic measures. Two cases are narrated at length and many others shortly described.

Freud's views and methods have not remained fixed from the beginning, but have undergone a continuous progress and development. During this evolution points of view have been modified, errors in perspective corrected, and great refinements in technique achieved. Most of the present volume is confined to his earlier writings of fifteen years ago, and so gives little inkling of the results now obtainable by modern modifications of the original

psycho-analytic method. There is, for instance, no mention of his masterly work on the significance and technique of dream interpretation, without a thorough knowledge of which no psycho-analysis can be carried out. For the following reason, however, these considerations in no way impair the value of the present volume. The easiest and best way of understanding Freud's work and methods is to follow the order of his own development, to begin at the beginning with these first articles, and then gradually to trace the later evolution. The last two articles here translated were written only recently, and the reader will doubtless be conscious of the gap between them and the earlier ones; this is explained by the considerations just mentioned.

It is to be anticipated that the appearance of this volume will give a much-needed stimulus in English-speaking countries to a more careful study of the psycho-neuroses, and to extension of the knowledge of the valuable therapeutic weapon we possess in Freud's method. To all those who are in any way concerned with such questions, and to whom the original German is inaccessible, the present volume is indispensable. It should, however, be again expressly pointed out that the knowledge gained from it is to be regarded, not as comprising a perfect whole, but only as furnishing a basis for the acquirement of later results, which will probably be translated in good time.

Dr Brill deserves much commendation for having so conscientiously performed the arduous task of translating these articles. He rightly states in his preface: "I feel quite certain that those who have read the original will best appreciate the task of the translator." Freud is unquestionably a hard author to read, and the difficulty of the translator is greatly increased, not only by his having to render into English quite new ideas and modes of expression, but also by his having to coin new words with which to translate the German equivalents that have been invented to express those ideas. This, in our opinion, Dr Brill has done admirably well. Several new words will no doubt become in the future a constituent part of our neurological vocabulary; such are "repress" (*verdrängen*), "ab-react" (*ab-reagieren*), etc. In many other respects the translation is less felicitous, and, indeed, sometimes makes the meaning obscure, as, for instance, where the German *Moment* (factor, agent) is misleadingly rendered by the English "moment." In conclusion, it should be mentioned that a translator's preface gives a useful and clear general account of the purport and subject of the papers.

ERNEST JONES.

**HYPNOTISM AND TREATMENT BY SUGGESTION. J. MILNE
BRAMWELL, M.B., C.M. Cassel & Co., Ltd., 1909. 5s.**

IN this second and smaller work on hypnotism, Dr Milne Bramwell gives the profession his best results and his latest conclusions in a handy form, which will be valued by many medical practitioners.

He begins with a few pages about the history of hypnotism, including a reference to the later British mesmerists, and describing the commencement of his own practice. The next chapter treats of the use of hypnotism as an anæsthetic in surgical operations, dealing specially with Esdaile's mesmeric cases and the author's own experiences. The four chapters which follow are of great importance, as they record Dr Bramwell's most brilliant medical results, under such headings as "Insanity," "Vicious Habits," "Obsessions," "Neurasthenia," and "Experimental Cases." The seventh chapter, on Telepathy, Clairvoyance, etc., is short and one-sided, and will evoke criticism. The remainder of the book contains a condensed account of hypnotic theories, a very interesting and important chapter on "Methods," showing the change in Dr Bramwell's own procedure, and concluding discussions on "Suggestibility" and "Suggestion in Ordinary Medicine and in Quackery."

From this brief summary it will be evident that Dr Bramwell has made extensive use of his well-known earlier and larger volume, "Hypnotism: its History, Practice, and Theory." This smaller treatise will probably appeal to a wider circle of readers, and may therefore be of more practical use, but it will not take the place of the larger text-book in the favour of those who desire a clear and comprehensive survey of the whole field of hypnotic study.

The chief novelty in the present book is the recorded change of method. Dr Bramwell no longer makes a practice of trying to induce sleep as a preliminary to curative suggestion. The new method will be best understood from a quotation. At the close of the first talk with the patient, and after all necessary explanations, Dr Bramwell says to him: "Next time you come we shall not talk about anything until after treatment. You will sit down in an arm-chair and close your eyes. While you are resting I shall make suggestions of two kinds (he means restful and curative), but I do not want you to listen to them. You will always hear my voice, but I wish it to be a drowsy accompaniment to your restful thoughts. While I am making suggestions, try to concentrate your attention on some restful mental picture; its nature does not matter, as long as it is restful. This concentration is

simply an artifice to turn your attention from my suggestions, the theory being that if your normal consciousness is absorbed in this way, the suggestions more easily reach the secondary one." It will be noticed that there is no reference here to hypnotic sleep. Dr Bramwell has prepared his readers for this by stating in the preface that in using the terms "hypnotism," "hypnosis," etc., he only means that "there has been induced by 'suggestion' a condition of increased suggestibility."

All this will commend itself to those who wish to simplify psycho-therapeutics as much as possible; who follow Dubois and Dejerine and many others in their dislike for all forms of mesmerism or hypnotism, and to whom anything that even hints of the so-called occult is anathema. Such men will welcome this apparently easy and straightforward method. But when they begin to treat their patients in this way, how many will achieve Dr Bramwell's successes? We feel bound to draw their attention to page 183, with the rather unexpected heading, "Mystery of Hypnosis." There they will read: "I do not in the least know why suggestions given in this particular way should often produce such marvellous results, and I always frankly admit my ignorance to my patients. Even in cases where there is apparently no deviation from the normal, and where neither concentration of attention nor restfulness has been obtained, some change must have taken place in the patient's brain which rendered him more suggestible." And again: "Possibly the most important thing is not so much the method as the man behind the method—his power to increase the suggestibility." Truly, such "suggestion" seems even more mysterious and complex than ordinary hypnotic sleep.

But here Dr Bramwell would assure us that such sleep is only apparent. All patients, he says, are conscious of everything that is passing around them, they are not in the proper sense of the word asleep. Now there are certain phases of hypnotic sleep or trance which seem to imply an opposite conclusion. In any case, comparisons of hypnosis with sleep are unsatisfactory. What do we really know of the nature of ordinary sleep! The instances which Dr Bramwell gives (p. 124) of time appreciation unassociated with hypnotic suggestion are by themselves sufficient to prove that consciousness persists, at least partially, during natural sleep.

As we have seen, no one is more ready than Dr Bramwell to admit the limitations of his knowledge, but our contention is that in his desire to simplify, and through excess of scepticism, he increases rather than diminishes the mysteriousness of his subject. Take as an example the following sentence (p. 130): "After many years of hypnotic work, and frequent opportunities of investigating the experiments of others, I have seen nothing, absolutely nothing,

which might fairly be considered as affording even the slightest evidence for the existence of telepathy or of any of the so-called 'occult' phenomena."

Now, considering the enormous number of patients who have passed through Dr Bramwell's hands, this testimony will have great weight with many. How, they will ask, can Dr Bramwell have missed these phenomena if they really exist? We suggest, as one of several possible answers, that while things wished for may be artificially created, a fixed attitude of unbelief often hinders the perception of what is actually present.

We make this criticism the more readily because we know that Dr Bramwell would regard it as a tribute to his sanity, and in conclusion we would only refer once more to the very remarkable successes in treatment recorded for us in this book, and thank the author for the encouragement and stimulus thus given to all who are interested in this branch of medical practice.

GEORGE KERR.

Obituary

EDOUARD BRISSAUD (1892-1909)

FRENCH neurology has just sustained a cruel loss in the death of Professor Brissaud. After a short illness, the symptoms of which pointed to a brain lesion, Professor Brissaud's condition became so grave that trephining was recommended as a last resort. In spite of the skill of Horsley, who hastened at the first summons to perform the operation, Brissaud died on the 19th of December 1909.

Brissaud occupied one of the most brilliant positions in French medicine. He was Professor of Internal Medicine to the Faculty of Medicine of Paris, Physician to the Hotel Dieu, and Member of the Académie de Médecine.

His world-wide reputation, however, rests upon his remarkable works upon neuropathology, largely the outcome of his long association with Charcot.

His first publications appeared during Charcot's lifetime, and amongst these we would cite "La Sclérose Tubéreuse Hypertrophique," written in collaboration with Bourneville, "La Contracture des Hémiplegiques," etc. On the death of his great master he was temporarily appointed to the Chair of the Clinique for Nervous Diseases at the Salpêtrière, and this was the origin of his collection of "Leçons," published in one volume (1893-1894). He then continued his teaching in his ward in the Hôpital Saint-

Antoine, and summarised it in a second book of clinical studies (1894-1896). These two volumes contain a great number of original investigations, and many more are scattered through various journals, including studies upon *infantilisme dysthyroïdien*, *pathogénie de la maladie de Parkinson*, *métamérie spinale*, *torticolis mental*, *scoliose de la sciatique*, *chorée variable de dégénérés*, *sinistrose*, etc.

Brissaud had a remarkable talent for teaching. He was very clear in his expositions, and showed great ingenuity in his manner of explaining the most difficult subjects. Everything had an interest for his open mind, and thus, although his neurological works have secured his fame, his contributions to the other branches of pathology have not been less important. He directed the publication of two great works on internal medicine—the “*Traité de Médecine*,” with Charcot and Bouchard, and the “*Pratique Médico-Chirurgicale*,” with Pinard and Reclus.

He was the founder and director, along with Pierre Marie, of the chief publication of French neurology, the *Revue Neurologique*.

BOOKS AND PAMPHLETS RECEIVED.

- D'Abundo. “*La Fisiopatologia del Talamo Ottico*.” Catania, Tipografia Giannotta, 1909.
- D'Abundo. “*La dottrina segmentaria in patologia nervosa*” (*Riv. Ital. di Neuropatol.*, Vol. ii., F. 9).
- Alfred E. Russell. “*Some Disorders of the Cerebral Circulation and their Clinical Manifestations*.” Med. Publishing Co., Lond., 1909.
- Monthly Bulletin of the Illinois State Board of Health*. Pellagra Number. Vol. iv., No. 5.
- Bulletin of the Ontario Hospitals for the Insane*. Vol. ii., No. 4, 1909.
- Hoffmann. “*Direkte neuro-myotonische und paradoxe galvanische Reaktion in einem Fall von Hemispasmus facialis (Kleinhirn-Brückenwinkeltumor)*.” Vogel, Leipzig, 1909.
- Hoffmann. “*Über eine Epidemie von Poliomyelitis anterior acuta in der Umgebung Heidelbergs*,” etc. Vogel, Leipzig, 1909.
- Krieger. “*Vollständige postdiphtherische Ösophagus- und Cardialähmung*.” Vogel, Leipzig, 1907.
- Hoffmann. “*Zur Kenntnis der syphilitischen akuten und chronischen atrophischen Spinallähmung*” (*Neurol. Centralbl.*, Nr. 20, 1909.)

Review

of

Neurology and Psychiatry

Original Articles

FREUD'S THEORY OF DREAMS.¹

By ERNEST JONES, M.D., M.R.C.P. (London),
Clinical Director of the Ontario Clinic for Nervous and Mental Diseases.

I SHOULD be setting myself an impossible task were I to attempt in the short space at my disposal adequately to give even a mere description of this theory, let alone any account of the evidence on which it is based or any discussion of possible objections and rival views. This Freud has done fully, and yet concisely, in his *Traumdeutung*, and no expository article can replace the study of this volume, nor can the theory be adequately stated more briefly than it is there. The aim of this paper, therefore, is a more modest one, in that it is intended merely to serve the purpose of bringing the theory to the notice of those psychologists who have not already examined it. Two especial claims that the theory has for the consideration of psychologists may perhaps be mentioned. In the first place the chief respect, and often the only respect, in which Freud's supporters and opponents agree is this: that if the theory developed in the *Traumdeutung* is true, it carries with it a revolutionary change in our knowledge of the structure and functions of the mind, a change that has considerable bearing on our conceptions of sociology, history, and the

¹ Read before the American Psychological Association, Dec. 29, 1909. An amplification of this paper, with illustrative examples, appears in the *American Journal of Psychology*, April 1910.

allied normative sciences; the importance, then, of carefully investigating this theory is obvious. In the second place, no investigator, in any country, who has learned the technique of the psycho-analytic method employed by Freud in the study of dreams has yet reached any conclusions that fail to confirm the theory in all particulars; this fact in itself speaks for the finished state in which Freud gave the theory to the world.

Of psycho-analysis itself no account can here be given¹; it essentially consists in the collecting of the *free* associations that occur to the subject when he attends to a given theme and abrogates the selecting control over incoming thoughts that is instinctively exercised by the conscious mind. If this method is applied to any component part of a dream, however senseless it may appear on the surface, mental processes are reached which are of high personal significance to the subject.

These mental processes Freud terms the "dream thoughts"; they constitute the "latent content" of the dream in contrast to the "manifest content," which is the dream as related by the subject. It is important to keep distinct these two groups of mental processes, for on the appreciation of the difference between them rests the whole explanation of the puzzling riddles of dreams. The latent content, or dream thoughts, is a logical and integral part of the mental life of the individual, and contains none of the incongruous absurdities and other peculiar features that characterise the manifest content of most dreams. This manifest content is to be regarded as an allegorical expression of the underlying dream thoughts, or latent content. The distortion of the dream thoughts into the dream proper takes place by certain well-determined psychological laws, and for certain precise reasons. The core of Freud's theory, and the most original part of his contribution to the subject, resides in his tracing back this distortion to a "censor" which interposes an obstruction to the becoming-conscious of unconscious psychical processes. This conception he arrived at through the analysis of various abnormal psychical manifestations, the symptoms of hysteria, *Zwangsneurose*, etc., which he found to be constructed on a plan analogous to that of dreams.

A dream is thus not a confused and haphazard congery of

¹ See "Psycho-analysis in Psychotherapy," *Montreal Med. Journ.*, Aug. 1909, and Brill's translation of Freud's "Selected Papers on Hysteria," 1909.

mental phenomena, but a distorted and disguised expression of highly significant psychical processes that have a very evident meaning, although in order to appreciate this meaning it is first necessary to translate the manifest content of the dream into its latent content in the same way that a hieroglyphic script yields its meaning only after it has been interpreted. The mechanisms by means of which the manifest content has been formed from the underlying latent content are mainly four. (1) The first of these is called *condensation*. Every element of the manifest content of the dream represents several dream thoughts ; it is, as Freud puts it, "over-determined." Thus the material obtained by analysis of a dream is far richer and more extensive than the manifest content of the dream. The condensation may show itself in several ways. For instance, in a dream a figure may appear that is built up of traits, some of which belong to one actual person and some to another, rather like a Galton's composite photograph. In this way a certain feature in common between several people or places may be expressed in the manifest content of a dream by the occurrence of a composite person or place built up in the way just mentioned ; the feature in common, which in this case is the essential constituent in the latent content, need not be present in the manifest content. The feature in common may be one actually present in real life, it may represent another common feature, or it may represent the wish that there were such a common feature. Further, not only is every element in the manifest content connected with several elements in the latent content, but every element in the latter is connected with several in the former. In addition to this, frequently associations exist between the different elements of the entire structure, so that this has often the appearance of a tangled network until the full analysis brings law and order out of the whole. At various points in the network the associations are especially close, as though they formed particular points of junction. These points are intimately related to the most significant elements of the underlying dream thoughts. Lastly, it may be remarked that the elements in the dream that show the greatest sensorial vividness are those that have the most associations in the dream thoughts, they are, in other words, the best "determined" elements. (2) The second distorting mechanism is that termed *displacement*. In most dreams it is found after

analysis that there is no correspondence between the psychical intensity of a given element in the manifest content and the associated elements in the latent content. An element that stands in the foreground of interest in the former, and seems to be the central feature of the dream, may represent the least significant of the underlying dream thoughts; conversely an apparently unessential and transitory feature in the dream may represent the very core of the dream thoughts. Further, the most prominent affect in the dream—hate, anxiety, and so on, as the case may be—frequently accompanies elements that represent the least important part of the dream thoughts, whereas the dream thoughts that are powerfully invested with this affect may be represented in the manifest content of the dream by elements of feeble affective tone. This distorting displacement Freud describes, using Nietzsche's phrase, as the transvaluation of all values. It is a phenomenon peculiarly frequent in the psychoneuroses, in which a lively interest or an intense affect may be found associated with an unimportant idea. In both cases a transposition has occurred whereby a highly significant idea is replaced by a previously indifferent and unimportant one. Often the association between the primary and secondary ideas is a very superficial one, and especially common forms of this are witty plays on the speech expression for the two ideas, and other kinds of clang associations. As is well known, this superficial association is usually, as Jung has well demonstrated, the cover for a deeper hidden bond of high effective value. This mechanism of displacement is the cause of the puzzling fact that most dreams contain so many indifferent and hardly noticed impressions of the previous day. It also explains much of the bizarreness of dreams, notably the remarkable incongruity between the intensity of the affect and the content of the dream; a person may in a dream be terrified at an object that is usually indifferent and quite at ease in the presence of what should be alarming danger.

(3) The third mechanism is that termed *dramatisation*. It is a familiar observation that the manifest content of most dreams is predominantly of a visual nature, so that it may be said that in this respect a dream resembles a theatrical presentation. This fact that the dramatisation operates principally by means of visual pictures exercises a selecting influence on the mental processes that have to be presented in this special way. Under

the same heading may also be included the special technical means employed by a dream to present the logical relations, causal connections, judgements, and the other intellectual operations to be found in the underlying dream thoughts. These will be further mentioned when we speak of the "dream-making" proper. (4) The fourth mechanism, that of *secondary elaboration*, fundamentally differs from the other three in that it arises from the activity, not of the underlying dream thoughts, but of the more conscious mental processes. To it we owe whatever degree of ordering, sequence, and consistency there may be found in a dream.

Having mentioned some of the mechanisms that bring about the distortion of the dream thoughts into the dream itself, we may now shortly consider the material and sources from which a dream arises. Again, we have sharply to distinguish between the manifest content of the dream and the underlying latent content—the latter will presently be dealt with apart. Three peculiar features exhibited by the memory in dreams have especially struck most observers—first, the preference shown for recent impressions; secondly, that the experiences are otherwise selected than in our waking memory, in that subordinate and unnoticed incidents seem to be better remembered than essential and important ones; and thirdly, the hypermnesia for previously forgotten incidents, especially for those of early childhood life. In every dream, without exception, occur incidents experienced by the subject in the last waking interval; the explanation why this is so cannot here be given, as it would lead us too deeply into the subject. Other recent experiences, however, that have not occurred on the day immediately preceding the dream are treated in just the same way as ancient memories. The selection of incidents of subordinate interest applies only to incidents of the day before the dream. Older incidents that at first sight appear to be unimportant can always be shown to have already become on the day of their occurrence psychically significant through the secondary transference to them of the effect of significant mental processes which they have got associated. The material of dreams may therefore be either psychically significant or the opposite, and in the latter case always arises in some experience of the preceding day. The third feature mentioned above—namely, the hypermnesia, particularly for infantile experiences—

is only sometimes to be found in the manifest content of the dream, but always in the latent content. The origin of some dream material is to be found in somatic stimuli during sleep, though not so frequently as many writers maintain. They are, however, in no case the cause of the dream, but are merely woven into its fabric in exactly the same way as any other psychical material, and only when they fulfil certain conditions. This is easily shown by, for instance, the following considerations. A sleeper may react towards a given somatic stimulation when this is of a lively nature, such as bad pain, in one of several different ways. In the first place, he may ignore it altogether, as often occurs in disease; in the second place, he may feel it during sleep without dreaming; thirdly, he may be awakened by it; and fourthly, he may weave it into a dream. Even in the last instance it enters into the dream only in a disguised form, and it can be shown that this disguise depends not on the stimulus but on the nature of the dream. The same stimulus may appear in different dreams in quite different forms, and analysis of the dream shows that the form adopted is altogether determined by the motive of the dream. The dream makes use of the somatic stimulation or not according to its needs, and only when this fulfils certain requirements.

We have now further to consider the construction of the manifest content out of the latent content, or what Freud calls the dream-making. Freud lays great stress on the fact that in the formation of a dream no intellectual operation of any sort is carried out; the dream-making is solely concerned with translating into another shape underlying dream thoughts previously in existence. The dream-making proper is a process more distant from waking mental life than even the most determined detractor of dreams would maintain; it is not merely more careless, incorrect, illogical, and incomplete than waking thought, but it is something that is qualitatively absolutely different from it, so that the two cannot be compared. In dream-making there is no thought, calculation, judgement, or any other intellectual operation; there is nothing but transformation of previously formed mental processes. Any speech phrases or ciphers in a dream, and anything that appears to indicate judgement, calculation, or argument, are taken bodily from the underlying dream thoughts, either directly or in a distorted form. Even some of

the waking judgements passed on a recent dream belong to the original dream-thoughts. In the dream-making a number of devices, grouped above under the heading of dramatisation, are employed to present the manifold intellectual operations and logical relations present in the latent dream thoughts. It is, however, impossible here to do more than mention a few of them. Such parts of speech as "if," "although," "either," "because," etc., which occur in the latent dream thoughts, and make them comprehensible, are expressed in the manifest content by special devices. For instance, logical connection is expressed by simultaneousness; causal relation either by presenting the cause in a fore-dream and the consequent effect in a main dream, or, more rarely, by producing a gradual transformation of one scene into another; an alternative is expressed by synchronously presenting as existent both possibilities, similarity by identification, and so on. Obvious absurdity in a dream signifies the existence of mockery or scorn in the dream thoughts. The affect in dreams has many interesting features. The incongruous manner in which it may be present when not explained by the ideas of the dream, or be absent when it might have been expected, has already been noted above, and is quite elucidated by psycho-analysis, which reveals that in the dream thoughts the affect is logically justified and congruous enough. The affect investing the latent content is always more intense than that present in the manifest content, so that although strongly affective dream thoughts may produce an indifferently toned dream, the reverse never occurs—that is to say, an affective manifest content never arises from an indifferently toned latent content. The effect of the dream-making on the original affect is different from that on the rest of the dream thoughts in that no distortion of it takes place. The affect appears in the same form in the latent as in the manifest content, though, of course, through the mechanism of transference it is otherwise associated than in the latter.

We have last to consider the most important problems of all, those concerning the latent dream thoughts. The first thing that strikes one about these is their intense psychical significance. A dream never proceeds from trifles, but only from the mental processes that are of the greatest moment and interest to the subject. More than this, they are processes of the greatest *personal* interest, so that the dream thoughts are invariably

egocentric. We never dream about matters that concern others, however deeply, but only about matters that concern ourselves. It has already been mentioned that the underlying dream thoughts are perfectly logical and consistent, and that the affect accompanying them is entirely congruous to their nature. Freud, therefore, not only agrees with those writers who disparage the mental quality of dreams, holding as he does that the dream-making proper contains none of the nobler intellectual functions but proceeds only by means of "lower" mental processes, but he also agrees with those other writers who maintain that dreams are a logical continuance of the most important part of our waking mental life. We dream at night only about matters that have most concerned us by day, though on account of the dream distortion this fact is not evident. The dream thoughts show certain differences in the young child and in the adult. In the young child no distortion takes place, so that the latent content and the manifest content are identical. In such cases it is easy to see that the dream represents the imaginary fulfilment of an ungratified wish. Now Freud maintains that the latent content of every dream represents nothing else than the imaginary fulfilment of an ungratified wish, and it has sometimes been alleged by his opponents that this generalisation is the outcome of observing a few child dreams, and that his analyses merely consist in arbitrarily twisting the dream until a wish can be read into it. We have seen that this is historically untrue, for Freud came to the analysis of adult dreams from the analysis of adult psycho-neuroses. He found that his patients' symptoms arose as a compromise between two opposing wishes, one of which was unconscious, the other conscious, and that they allegorically represented the imaginary fulfilment of these two wishes. He further found that an essential factor in their production was a conflict between the two systems, of such a kind that the unconscious one was forcibly prevented from becoming conscious; it was unconscious because it was repressed. It frequently happened that the psycho-analysis led to the patient's dreams, and on submitting these to the analysis in exactly the same way as any other mental material, he discovered that the structure of them showed close resemblances to that of the neurotic symptoms. In both cases the material examined proved to be an allegorical expression of deeper mental processes, and in both these deeper

mental processes were unconscious and had undergone distortion by the censor of consciousness. The mechanisms by means of which this distortion is brought about are very similar in the two cases, the chief difference being that representation by visual pictures is much more characteristic of dreams, though in psychopathology we are also familiar with it in the form of hallucinatory visions. The unconscious mental processes always in both cases arise in early childhood and constitute a repressed wish, as do all unconscious processes, and the symptom or dream represents the imaginary fulfilment of that wish in a form in which is also fused the fulfilment of the opposing wish. Dreams differ from psycho-neurotic symptoms in that the opposing wish is always of the same kind, namely, the wish to sleep. A dream is thus the guarder of sleep, and its function is to still the activity of unconscious mental processes that otherwise would disturb sleep. Freud couples with his investigations on dreams a penetrating inquiry into the nature of unconscious mental processes, the function of consciousness, and many allied subjects that I cannot here consider.¹ I would conclude with a sentence of his, that "Dream interpretation is the golden way to the knowledge of the unconscious in mental life."

CYSTS OF THE CEREBELLUM AND THE RESULTS OF CEREBELLAR SURGERY.

By R. T. WILLIAMSON, M.D., F.R.C.P.

IN cases presenting the symptoms of cerebellar tumour, the lesion is sometimes found, at the autopsy or on operation, not to be a tumour but a cyst. The symptoms of the two affections are practically the same, and a clinical diagnosis between the two conditions is not possible at present.

The exact pathological nature of cerebellar cysts has been much discussed. In sarcoma and glioma of the cerebellum cysts are not infrequently present, but both the tumour growth and the cyst can be seen by the naked eye at the autopsy, and such cases are clearly cystic tumours. Hydatid cysts and cysts of the *cysticercus cellulosæ* are occasionally found in the cerebellum.

¹ See "Freud's Psychology," *Psychological Bulletin*, March 1910.

But in addition to these cysts, there are others which are not parasitic in origin, and also no distinct tumour growth can be seen by the naked eye around the cyst. These are described as simple or serous cysts of the cerebellum. On microscopic examination of the cyst wall, in some of these cases, a very minute fragment of tumour growth, sarcoma or glioma, has been found at one part. In two cases which I reported (1) in 1892 this was the condition. In both cases no definite tumour growth could be seen by the naked eye in the cyst wall; but on microscopic examination, in one case there was a minute patch of vascular new growth (glioma), measuring $\frac{3}{8}$ of an inch by $\frac{1}{8}$ of an inch (about 2.5 mm. by 5 mm.) in the wall of a cyst nearly the size of a pigeon's egg; in the other case there was a small nodule of glio-sarcoma, $\frac{4}{16}$ of an inch in diameter (about 6 mm.) at one end of a cyst which was about the size of a walnut.

In many cases which have been recorded no evidence of any minute fragment of new growth has been detected, and in some of the more recent cases a most careful microscopic examination has been made.

The varieties and nature of cerebellar cysts have been carefully discussed by Lichtheim (2) and F. Henschen (3). Apart from cystic tumours, in which the tumour can be recognised by the naked eye, and parasitic cysts, the following varieties have been described:—(1) Cysts with only a minute microscopic fragment of tumour growth in their walls; (2) serous cysts without the slightest trace of new growth in their walls; (3) cysts connected with the fourth ventricle; (4) cysts following hæmorrhage or softening; (5) dermoid cysts.

The frequency of cerebellar cysts, i.e. cysts not associated with any signs of new growth which can be detected by the naked eye, is indicated roughly by the records of post-mortem examinations and of surgical operations, in cases supposed to be due to cerebellar tumour.

In my own pathological specimens I find that there are 3 of cerebellar cyst and 12 of cerebellar tumour. In one of the cysts the patient suffered from diabetes mellitus, and there were no symptoms of cerebellar disease during life (4). Excluding this case there were 2 cerebellar cysts in 14 cases in which the symptoms were those of cerebellar tumour, *i.e.* 2 cysts to 12 tumours—1 to 6, a proportion probably too high.

The statistics published by Allen Starr show a proportion of 9 cysts to 128 tumours—1 to 14, or 6·5 per cent.

The records published by Frazier of operations on the cerebellum, in cases in which tumour had been diagnosed, give a proportion of 9 cysts to 97 tumours, or about 1 to 11, or 8·4 per cent.

In 30 operations by Cushing, on cases presenting the symptoms of cerebellar tumour, the lesion was a cyst in 4 (? simple or not).

Amongst 22 cases published by T. Grainger Stewart and Gordon Holmes there were 3 of cerebellar cyst and 19 of tumour—1 cyst to 6 tumours = 13·6 per cent.

No doubt some of the cases regarded as simple cysts, at the autopsy or operation, have been really cystic tumours. But allowing that the figures just given would, therefore, probably suggest too high a percentage of simple cysts, I think it may be fairly estimated, that in at least 5 per cent., or 1 in 20, of the cases in which the symptoms are those of cerebellar tumour, the actual lesion is a cyst.

Results of operative treatment in cerebellar cysts.—In an article already referred to I stated: "In the case of a cerebellar cyst, in the wall of which there is either no new growth or only a small fragment, it is possible that if the cyst could be punctured and drained like an abscess, temporary or permanent benefit might follow." At that time, 1892, I was not aware that this operation had ever been performed, but there are now a number of cases on record. Hildebrand (5) states that in 19 cases of cerebellar cyst, operative treatment was successful in 18, *i.e.* the patient recovered from the operation, though in several cases loss of vision remained; in only 1 case was the operation followed by a fatal termination up to the time when the cases were recorded.

Very different are the results in tumour. Amongst 20 cases of operation for tubercular tumour of the cerebellum, death occurred after the operation in 18, and only 2 were recorded as having recovered at the time the cases were published. The statistics of Borchardt (6) respecting 101 operations for supposed cerebellar tumour, show that in 12 only was a cure reported at the time the cases were published. Borchardt (6) has collected the records of 14 cases of operation on cerebellar cysts; 13 were reported as cured (*i.e.* 92 per cent.).

Amongst the cerebellar cases recorded by T. Grainger Stewart and Gordon Holmes (7), operation was performed on 20. In 3 cases a cyst was found. The operation on the cerebellar cysts was performed in each case by Sir Victor Horsley, and all are recorded as having made practically a complete recovery from the symptoms, at least temporarily, if not permanently. Six months after the operation in one case the only abnormal sign was slight lordosis; in a second case six months after the operation the patient was able to walk quite well; in the third case, more than six months after the operation, the patient could walk quite well. Of the 17 cases of tumour, 12 died after the operation; only 5 were alive at the time the cases were recorded.

I have collected from medical literature 19 cases of cerebellar cysts (excluding parasitic cysts) in which operation was performed; in all the result was recovery, at least temporarily. These cases are tabulated at the end of this article. (I have excluded cases in which there was evidence of tumour growth, in addition to the cyst at the operation.)

In most cases the cerebellar cyst has been simply evacuated and drained.

Now it is possible that a few of these cases were cysts associated with tumours (of macroscopic size), which were not detected at the operations, and in such case the good results may not be permanent. But I think the records may be taken to indicate that in a large proportion of the operations on cerebellar cysts the results were recovery for a long period, or permanently; and these results are in marked contrast to those of operation for cerebellar tumours.

Operative treatment in cerebellar diseases.—There can be now no difference of opinion, that operation is indicated in almost all cases when a diagnosis of abscess or parasitic cyst of the cerebellum is probable. But many physicians hesitate to recommend operation when the symptoms and history point to cerebellar tumour, on account of the unfavourable results which have so very frequently followed the surgical treatment of this disease. Statistics show that fatal results more frequently follow operations for cerebellar tumour than operations for tumour of other parts of the brain. Sir Victor Horsley (8) gives the mortality of operation for tumours in the cerebellar region as 1 death in 10

operations = 10 per cent., whilst in the motor area it was 1 death in 27 operations.

Knapp's statistics of cases collected from literature give a proportion of 23 deaths in 55 operations = 41 per cent.

Frazier's statistics of collected cases show a mortality of 42 per cent. ; but he points out that the mortality has recently diminished considerably.

Sir Victor Horsley has recorded a number of brilliant results of operation for the removal of cerebellar tumour, and others have recorded successful cases ; but most surgeons appear to have been very unfortunate, and even in the cases reported as recoveries, recurrence of the growth, or a fatal complication, has occurred very frequently at a later date.

The prospects of permanent successful results of the removal of cerebellar tumours are extremely small, unless the surgeon should have had exceptional experience in brain surgery. A review of the results of cerebellar surgery shows, however, that there are two points clearly in favour of surgical treatment, when the symptoms are those of cerebellar tumour.

(i) Craniectomy in the region of the cerebellum relieves tension, and even if no attempt be made to remove the tumour, this palliative treatment is often followed by relief of the most distressing symptoms. The headache often diminishes or disappears, the optic neuritis subsides and vision often improves. (See articles by Sir Victor Horsley, James Taylor, Marcus Gunn (10), Allen Starr (11), and others.)

(ii) Sometimes at the operation it is found that the lesion is not a tumour but a cerebellar cyst, and when this is the case surgical treatment has usually been followed by excellent results, evacuation of the contents of the cyst, and draining of the cyst, being followed in most cases by recovery, at least for a long period, if not permanently. The chances of finding that the lesion is cystic may be estimated roughly as at least 1 in 20 (5 per cent.). In very rare cases the lesion found at operation has been a hydatid cyst, or the cysticercus cellulosæ, and in such cases good results have been obtained. But in England these cysts are extremely rare in the cerebellum.

The results of the removal of cerebellar tumours have been so very bad that many physicians would probably consider that there is little to be said in favour of this operation ; but the relief of

OPERATIONS ON CEREBELLAR CYSTS.

AUTHOR OF PUBLISHED RECORD.	JOURNAL.	OPERATION.	RESULT.
1. Rotgans and Winkler.	<i>Arch. della Soc. ital. di Chir.</i> , 1892, 21 (quoted by Borchardt, <i>Archiv J. klin. Chirurgie</i> , Bd. 81, p. 420, 1906).	Evacuation of cyst.	Recovery.
2. " "	" "	Nature of operation not stated.	Recovery. At the end of 6 months "all was normal," only a slight lordosis remained.
3. " "	" "	" "	Recovery. At the end of 6 months there was only a slight staggering to the left and slight lordosis.
4. " "	" "	" "	Recovery. Slight staggering persisted.
5. Hermanides.	<i>Neurolog. Centralbl.</i> , p. 182, 1895.	Cyst evacuated.	Recovery. But at a later date local signs at the seat of the operation indicated a new growth or a return of the cyst.
6. T. Grainger Stewart and Gordon Holmes. Operations by Sir Victor Horsley (Physician, Dr Ormerod).	<i>Brain</i> , p. 563, 1904 (and <i>Brain</i> , p. 467, 1903).	Cyst opened and drained.	Recovery. Before operation marked ataxia. "Vision, only light perception, intense optic neuritis." After operation could walk in 2 weeks; in 4 weeks vision $\frac{3}{4}$ in both eyes. Six months after the operation the only abnormal sign was a slight degree of lordosis.
7. " (Physician : Dr Tooth).	" (and <i>Brain</i> , p. 468, 1903).	Cyst removed.	Recovery. Before operation headache, vomiting, impaired vision, optic neuritis, and ataxia. After operation headache and vomiting at once ceased. "Six months later all symptoms had disappeared except some lordosis and a tendency to occasionally stumble to the left. Later his gait was quite normal."
8. " (Physician : Dr Ferrier).	" "	Cyst evacuated.	Recovery. Symptoms subsided rapidly. Six months afterwards "patient was able to walk quite well, but still tended to stumble to the left."
9. Homburger and Brodnitz.	<i>Mitteil. aus d. Grenzgeb. d. Medicin und Ch.</i> , Bd. xix.	Draining, and removal of part of cyst wall.	Recovery. Ataxia had disappeared when patient left the hospital. Patient "cured and able to follow his employment."
10. Auerbach and Grossmann.	" , Bd. xviii.	Extirpation of cyst.	Recovery from operation. Symptoms subsided, and patient had returned to work 6 months after the operation; but left eye was blind (post-neuritic optic atrophy); ataxia in left hand.

AUTHOR OF PUBLISHED RECORD.	JOURNAL.	OPERATION.	RESULT.
11. Frazier and Mills.	<i>New York Med. Journal and Philadelphia Med. Journal</i> , Jan. 22, 1904, and Jan. 18, 1905.	Cyst evacuated.	"Recovery from operation; great relief of headache and other symptoms. No recurrence more than a year after operation."
12. Lichtheim (Surgeon: Garrè).	<i>Deutsche med. Wochenschrift</i> , July 13, 1905.	Cyst drained.	Recovery from operation and disappearance of cerebellar symptoms, but vision remained greatly impaired.
13. " "	" "	Cyst drained.	Recovery from operation; commencing optic atrophy and uncertain gait persisted; all other symptoms disappeared. Both cases well 9 months after the operation (Scholz, <i>Mitteil. aus den Grenzgebieten der Med. und Chir.</i> , Bd. 16, p. 750).
14. Roux (Surgeon: Viannay).	<i>Revue Neurologique</i> , No. 19, Oct. 15, 1909.	Cyst opened and drained.	Recovery from operations; very great improvement; disappearance of irritative symptoms. First operation July 1907; cyst not found. In August 1908 second operation revealed a very large cyst, which appeared to have destroyed one hemisphere of the cerebellum. Case reported October 1909.
15. Borchardt and Oppenheim (H.).	<i>Zentralblatt f. Chirurgie</i> , Beilage, No. 31, S. 50, 1909 (abstract).	Evacuation and partial excision of cyst.	Recovery. Operation at end of May 1907; patient shown at 38th Congress of the Deutsche Gesellschaft f. Chirurgie, April 1909.
16. " "	" "	Exact nature of operation not stated.	Recovery. Patient shown 7 months after operation.
17. Unger.	" and <i>Berliner klin. Woch.</i> , No. 5, 1909.	Evacuation of fluid (cyst at cerebellar - pontine angle; pathological diagnosis — "Arachnitis circumscripta syphilitica").	Recovery. Case reported 2 years after operation.
18. Sinkler, W.	<i>Journal of the American Med. Assoc.</i> , Sept. 26, 1908, p. 1057.	Cyst evacuated.	Recovery. Patient in perfect health 7 months after operation, but vision greatly impaired.
19. Wilms.	<i>Deutsche med. Woch.</i> , 1909, No. 35, p. 1550 (abstract, Society Report).	Exact nature of operation not stated.	Complete recovery. Patient doing heavy work.

symptoms by the craniectomy, even if the tumour be not found or not removed, and especially the chances of finding that the lesion is a cyst and, consequently, particularly suitable for operation, are two points which, to the writer, appear to indicate the advisability of surgical treatment, in many cases in which the symptoms are clearly those of cerebellar tumour or cyst, providing the duration of the disease has not been too long. If the cerebellar lesion should be a cyst, it may be curable temporarily, and probably permanently, by evacuation of the contents of the cyst.

On pages 148 and 149 is a tabulated list of the cases of cerebellar cyst, treated surgically, which I have been able to collect from medical literature. Probably there are others which I have not met with.

In a case recorded by von Bergmann (*Archiv f. klin. Chirurgie*, Bd. 65, p. 957) a cyst of the cerebellum was removed. Recovery followed, and the cerebellar symptoms disappeared. The patient returned to school, and was in good health two years after the operation. From subsequent examination of the cyst wall, it was considered that the case was probably one of cystic sarcoma.

In a case recorded by Hudson (*American Journal of the Medical Sciences*, Sept. 1903), a cerebellar cyst was evacuated. Recovery followed, but vision was lost. The health was good for three years; then a "solid mass" grew into "the opening" made at the operation. The patient was alive seven years after the onset of the symptoms.

In a case recorded by Baisch the symptoms were those of cerebellar tumour. On brain puncture (method of Weisser and Pollack) in the region of the right half of the cerebellum, 16-20 c.cm. of fluid were withdrawn by aspiration. A cyst in the right half of the cerebellum was diagnosed. The exact nature of the cyst (whether simple or a cystic tumour) could not be decided, as it was not exposed. Such marked improvement occurred that no operation was performed. The patient remained blind owing to optic atrophy, but other symptoms disappeared, and he left the hospital, seven months after the brain puncture, in good health (Baisch, *Beiträge zur klin. Chirurgie*, 1908, Bd. 60, p. 485).

The following cases of parasitic cysts may be added :—

AUTHOR.	JOURNAL.	OPERATION.	RESULT. NATURE OF CYST.
Mannsell.	<i>New Zealand Medical Journal</i> , 1889.	Removal.	Hydatid. Recovery, but blindness persisted.
Newton, R. E.	<i>Australian Med. Gazette</i> , 1903, xxii. 219.	Draining of cyst.	Hydatid. Recovery. Almost all symptoms disappeared.
Hildebrand.	<i>Deutsche med. Wochenschrift</i> , Nov. 18, 1909, p. 1999.	Exact nature of operation not stated.	Recovery; but some months later death from cysticercus in the 4th ventricle.

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6. Borchardt und Seiffer, *Neurolog. Centralbl.* (abstract), 1905, p. 1117, und Borchardt, *Arch. f. klin. Chir.*, lxxvii., H. 3.
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9. Frazier, *N.Y. Med. Journ.* and *Phila. Med. Journ.*, Feb. 18, 1905.
10. Gunn (R. Marcus), *Brit. Med. Journ.*, Oct. 26, 1907.
11. Starr (Allen), *Journ. Amer. Med. Assoc.*, Sept. 22, 1906.

A NOTE ON PLASMA CELLS.

By JOHN TURNER, M.B.,

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To stain sections fixed in alcohol, imbedded in paraffin and attached to the slide by Gulland's method with Pappenheim's combination of pyronin and methyl green, I have found it advantageous to increase the quantity of pyronin from 0.25 gm. to 0.3 or even 0.35 gm., so that the formula is as follows :

Methyl green	.	.	.	0.30
Pyronin	.	.	.	0.30 to 0.35
Alcohol absol.	.	.	.	2.50
Glycerin	.	.	.	20.00
5 per cent. aqueous sol. carbolic acid				100.00

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The sections attached to the slide are stained preferably in glass cylinders for one to two hours in the incubator at 35° to 37° C. They should then be of a fairly deep purplish blue colour. They are rinsed in distilled water till they turn a dull red. The superfluous water is wiped from the slide and the section lightly dried by filter paper. Absolute alcohol is dropped on it, and then it is quickly flooded with xylol and mounted in balsam. The stain appears to be stable, at all events sections stained three months ago and left exposed to light have not faded in the least.

Apart from its plasma cell staining capacity, the stain is an excellent one for the nerve cells, and judging from a comparison of control sections from the same brains stained in Unna's polychrome blue, it is even more specific for the chromatoplasm than the latter. The fellows of small nerve cells which failed when stained with the polychrome to show any definite tigroid substance were frequently found to show quite an appreciable quantity when stained in the Pappenheim mixture. In the nerve cells the chromatoplasm stains crimson, the nuclear membrane and chromatin a dull slate colour, the nucleolus bright red and pigment green. The nucleoli of glia and endothelial cells are also stained red, and, which it seems to me is a point of considerable interest in reference to the much-disputed origin of the plasma cells, the nucleolus of certain of these cells is also stained red.

From a study of the appearance of the nuclei of the plasma cell—their shape, form of chromatin, and this red staining of the nucleolus—one can with tolerable assurance assert that some at any rate of these cells are derived from the endothelial cells of the vessels. In Fig. 1 is shown a cluster of large plasma cells lying on and around a small vessel in the cortex of a case of general paralysis. The clear space is well shown in all of them, and is very often quite sharply limited as if punched out of the cytoplasm. When very closely examined this area in many cases gives the impression of not being empty, but occupied by an extremely fine pale granular substance. The nuclei are large, not round, but oval or kidney-shaped, and frequently with a clear-cut notch or indentation in the side, which sometimes corresponds to a similar indentation in the cytoplasm, and gives an appearance as though the cell and its nucleus were in the act of

dividing. These nuclei do not contain bulky chromatin masses arranged in the familiar clock-face way, but very fine dark granules, and, finally, they practically all show a bright red nucleolar spot. Indeed, they show all the characters and appear quite similar to the large pale oval nuclei of the endothelial cells lining the vessels. The sharply bitten out, as it were, portion is a highly characteristic feature of the nuclei of such cells, and I am not familiar with any other nuclei showing this condition. I drew attention to this point ten years ago in a paper on the nuclear proliferation in the adventitia in general paralysis in the *Journal of Pathology and Bacteriology*, Dec. 1900.

But, besides the just described form of plasma cells, there are others which show very different characteristics. In Fig. 2 a group of plasma cells surround a new-formed vessel in the margin of a gumma in the pons. These cells, it can be seen, have a denser cytoplasm than those which it is suggested are derived from endothelial cells, and a *round* denser nucleus with the typical clock-face arrangement of the chromatin, and they do not appear to contain a red nucleolar spot. In point of fact these nuclei are identical in appearance with the nuclei of lymphocytes, and there are many histological reasons for supposing them to be of such a nature. In films from the cerebro-spinal fluid and in the nuclear proliferation in the meninges in general paralysis one can trace all stages apparently between lymphocytes and typical plasma cells of the variety now being described, and the evidence derived therefrom speaks very strongly in favour of the origin of these particular plasma cells from lymphocytes.

Although the nuclei depicted in Fig. 2 do not show a red nucleolar spot, I have seen this appearance in some of the nuclei with clock-like arrangement of the chromatin, so that this point alone—that is, the peculiar arrangement of the chromatin—is evidently not sufficient to determine the lymphocytic origin of a given plasma cell, the nuclei of lymphocytes never, so far as I know, showing a red nucleolus. Not all the large clear nuclei of plasma cells and of glia cells show the red nucleolus; but the red spot is so small and the nucleus relatively so large that necessarily many sections must be devoid of it.

Again, in film preparations of the cerebro-spinal fluid, although the two varieties of plasma cells can be easily made out

yet I have not been able to detect a red spot in those with the large pale indented nuclei, but possibly this is due to the fact that entire cells and not optical sections are being viewed.

Although as a rule the type of plasma cell described here as of endothelial origin is larger than the other variety, yet this does not, I think, warrant the idea that they may be only an older form of the latter. Such a conception would scarcely account for the very radical difference in the nuclear structure, and, besides, one occasionally encounters specimens of the latter form which are quite as large as the former.

These observations leave untouched the question of the possible origin of plasma cells from glia cells. I can only state that although glia nuclei show a red spot, yet their other characters—the large, clear, bladder-like form with scanty contents and the absence of indentations—are never, so far as I am aware, seen together in the nuclei of plasma cells. The cytoplasm of the glia cells stains with this Pappenheim mixture of a *very* faint reddish tinge.

It would appear as if the features referred to in this note justify one in describing at least two varieties of plasma cells:

(1) Large rather pale cells with large pale oval or indented nucleus and a red nucleolar spot, representing plasma cells of endothelial origin.

(2) Denser cells, usually smaller, with a round darker nucleus and clock-face arrangement of chromatin, many at least of which seem to be devoid of a red nucleolus, and these with considerable probability are cells derived from lymphocytes.

EXPLANATION OF FIGURES.

They were outlined by the aid of a Zeiss Camera Lucida, and are magnified 870 diameters.

Fig. 1.—A small vessel in the cortex of a general paralytic surrounded by large (some being 20 μ long) plasma cells. The great majority of these have nuclei similar to the nuclei of certain of the endothelial cells. One or two have smaller, denser, round nuclei with clock-like arrangement of chromatin. Notice the plasma cell-like character of some of the long, thin endothelial cells lining the vessel.

The large, pale, finely granular oval nuclei with one or two red spots and no visible cytoplasm are endothelial nuclei.



Fig 1



Fig 2

To illustrate Dr John Turner's Paper.

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The vessel is cut across at the right side of the picture, and shows here an intravascular clot and the outlines of erythrocytes.

Fig. 2.—A small new-formed vessel in the edge of a gumma in the pons, showing a group of plasma cells with denser cytoplasm than those depicted above, a round and denser nucleus with the characteristic arrangement of its chromatin.

CEREBRAL ABSCESS SECONDARY TO BRONCHIECTASIS; FITS WITH VISUAL AURA, ETC.

By EDWIN BRAMWELL, M.B., F.R.C.P.

IN my paper in the last number of the *Review* I omitted, in the table of cases in which a visual aura had been proved to depend upon organic disease, to include an interesting case reported by Stanley Barnes (*Rev. of Neurol. and Psychiat.*, Vol. i., 1903, p. 531). This patient presented a degree of graphic aphasia, while in addition there was a marked homonymous contraction of the fields of vision to the right. He suffered from fits, and stated that before a fit he had a "shimmering in front of both eyes, like you see on a clear, hot day at the seaside." The visual fields were tested about half an hour after the commencement of an attack, when "it was found, on comparing this chart with the previous ones, that the field of the right eye had undergone a marked concentric contraction, and that there was a strong tendency to the spiral fatigue curve of hysteria. There was a slight general contraction of the field of the left eye also."

At the post-mortem "the left hemisphere was seen to be much larger than the right, and presenting on the surface of the former in the parietal region was a growth whose superficial area was circular, and about the size of a crown piece. The growth was bounded in front by the ascending parietal convolution, below by the supramarginal, behind by the angular (which was partly involved by pink, young-looking growth), and above the superior parietal lobule was somewhat involved." The growth was a gliosarcoma, and from the history of the case it must have been present for several years.

Abstracts

ANATOMY.

THE MORPHOLOGY OF THE FOREBRAIN VESICLE IN
(118) **VERTEBRATES.** J. B. JOHNSTON, *Journ. of Comp. Neurol.*
and Psychol., Vol. xix., No. 5, Nov. 1909.

THE purpose of the paper is to determine the anterior end of the brain, the boundary line between diencephalon and telencephalon, the relations of the membranous tela and ventricles and the chief sub-divisions of the fore-brain. The material for study consisted of embryos of selachians, amphibians and mammals, and of adult brains of all classes of vertebrates. The key to the chief relationships is found in the relations of the optic vesicles and chiasma. The optic vesicles are formed from the lateral (dorsal) part of the neural plate, and are connected with one another by a primitive optic groove immediately behind the transverse ridge which bounds the neural plate in front. This terminal ridge is later occupied by the chiasma. After the neural tube is closed the terminal ridge is prolonged obliquely toward the region of the optic thalamus in anticipation of the ingrowth of optic tract fibres. These oblique ridges separate the optic vesicles from the primitive optic groove and leave them in connection with the preoptic recess. It is clear that the optic chiasma occupies the anterior border of the brain floor, and that it, with adjacent structures, belongs to the telencephalic segment. The boundary between diencephalon and telencephalon dorsally is marked by the velum transversum. This is described in mammalian embryos. The boundary line in adult mammals runs just behind the interventricular foramen, and meets the caudal surface of the chiasma-ridge. The telencephalon possesses a median ventricle. A revision of the BNA tables in accord with the new facts completes the paper.

AUTHOR'S ABSTRACT.

ON THE CERVICAL SPINO-BULBAR AND SPINO-CEREBELLAR
(119) **TRACTS AND ON THE QUESTION OF TOPOGRAPHICAL**
REPRESENTATION IN THE CEREBELLUM. A. SALUSBURY
MACNALTY and Sir VICTOR HORSLEY, *Brain*, Part cxxvii.,
1909.

THE object of the investigation was to establish, if possible, what tracts ascend from the cervical region of the spinal cord to the bulb and to the cerebellum.

The source of the direct spino-cerebellaris dorsalis and its partial destination are known; the tractus spino-cerebellaris ventralis (Gowers' tract) and the dorso-ventral tract of Pellizi were especially considered in this research.

The afferent impressions to the cerebellum may schematically be regarded as represented in one of four regions of the cord (Region I., II., III., IV.), which may conveniently be termed the head and neck region, the fore-limb or arm region, the trunk region, and the hind-limb region respectively. The authors give an historical survey of the general literature of the spino-cerebellar tracts.

The operative procedure consisted of making a lesion by anodal electrolysis (a special curved needle being employed) at the junction of the anterior and posterior cornua of the spinal cord.

The resultant degeneration in the brain and spinal cord was studied by the Marchi method. Complete results were obtained from one dog, two cats, and eight monkeys.

Taking up the regions of the cord already enumerated, the authors find in Region I. that the spino-cerebellar fibres springing from the upper cervical region (head and neck movements) pass to all portions of the vermis, except the most dorsal and most ventral, the parts omitted being the two anterior lobuli of the lobus posterior and the lingula, nodulus, and uvula.

In the medulla these fibres give collaterals to the nucleus vestibularis (Deiter's), the nucleus formationis reticularis, and the nucleus lateralis.

In Region II. the spino-cerebellar fibres for the fore-limb occupy definitely a position posterior to those for the trunk and lower limb, but in their distribution and termination in the lobus centralis they are scattered over the whole area, and are not aggregated into any special folium.

The ipsilateral fibres send collaterals into the nucleus lateralis medullæ, the contra-lateral fibres do not.

With regard to the terminal distribution in the cerebellum of the spino-cerebellar tracts, it is found that the fibres of Region I., mainly furnished through the tractus spino-cerebellaris ventralis, are distributed to the lobus centralis and the culmen, together with a few to the lobus pyramidalis; none supply the lingula.

The fibres of Region II. end in the lobus centralis, the ventral half of the culmen, and the ventral half of the lobus pyramidalis.

No experiments were made in Region III.

In Region IV. the fibres are those of the tractus spino-cerebellaris dorsalis. The whole tract ends in the lobus centralis, the culmen, the lobus posterior and the lobus pyramidalis on both sides of the median plane. This confirms Mott's original description.

The important connection between Gowers' tract and the nucleus fastigii (roof nucleus) is pointed out, and the distinction between the vermis and the lateral lobes of the cerebellum is emphasised. The conclusion is arrived at that, from the point of view of afferent function, there cannot be said to be any evidence for topographical localisation of the limbs and part of the body in the cerebellum.

The remainder of the paper is devoted to a discussion of the symptoms displayed by the animals experimented upon, and to the question of the unilaterality of the distribution of the spino-cerebellar tracts.

AUTHORS' ABSTRACT.

**EXPERIMENTAL RESEARCHES ON THE CENTRAL PATHS OF
(120) THE PUPILLARY FIBRES OF THE SYMPATHETIC.**

(*Experimentelle Untersuchungen über die zentralen Wege der Pupillenfasern des Sympathicus.*) TRENDELENBURG und BUMKE, *Klin. Monatsbl. f. Augenheilk.*, Nov. 1909, p. 481.

IN a previous research the authors observed that division of one side of the medulla in cats caused a contraction of the pupil of that side, which remained for a considerable time. The present investigation has been undertaken to ascertain whether this phenomenon is due to stimulation of the third or paralysis of the sympathetic nerve.

Details of thirty-four experiments on cats, monkeys, and dogs are given, with numerous illustrations and a table of results. The experiments consisted of transverse sections of one half of the cervical spinal cord, and median longitudinal sections through the lower cervical and upper dorsal segments, with or without bilateral division of the cervical sympathetic or extirpation of the superior cervical sympathetic ganglion. In some cases one or both cerebral hemispheres were excised, and in others the cut ends of the cord were stimulated.

The authors conclude that contraction of the pupil of the same side, after division of one half of the medulla or cervical cord, is due to paralysis of the dilator of the iris. The most probable explanation is that the higher centres of the brain transmit continuous stimuli through the medulla and cord to the centres for the sympathetic on the same side, and that division of these paths causes a paralytic contraction of the pupil. The cerebral hemispheres are not of essential importance in originating these impulses, as after their complete removal the same result is obtained by section of the cord.

H. M. TRAQUAIR.

THE DEGREE OF CROSSING OF THE MOTOR NERVES OF
(121) **THE GLOBE OF THE EYE.** (Le degré d'entre-croisement
des nerfs moteurs du globe oculaire.) A. VAN DER SCHUEREN,
Nervaze, Vol. x., f. 2, 1909, p. 117.

THE author's conclusions are derived from experiments on rabbits. The third nerve contains direct fibres from the anterior two-fifths and the ventral part of the posterior three-fifths of the nucleus, and crossed fibres from the dorsal portion of the posterior three-fifths of the nucleus.

The fourth nerve is mainly composed of direct with a few crossed fibres.

The sixth nerve consists entirely of direct fibres. The accessory nucleus of Van Gehuchten belongs to the sixth and not to the seventh nerve.

The posterior longitudinal bundle, while connecting the nuclei of the third and fourth nerves of the same side, does not connect either of these with the sixth nucleus.

There is no genuine internuclear connection by association fibres.

The author considers that it is unnecessary to postulate a special centre for conjugate movements. It is enough to suppose that such movements are executed by the two cerebral hemispheres.

H. M. TRAQUAIR.

THE DEVELOPMENT OF THE AUDITORY NERVE IN VERTE-
(122) **BRATES.** JOHN CAMERON and WILLIAM MILLIGAN, *Journ.*
Anat., Jan. 1910, p. 111.

THE main results in this paper may be summarised as follows:—

(1) The auditory end organ is brought into direct anatomical continuity with the hind brain during the early developmental stages by means of a nucleated tract of cytoplasm, to which the authors have applied the term *syncytium*.

(2) Three types of neuroblasts may be identified in the auditory syncytium. The term α -neuroblast has been adopted for those existing during the early stages. The β - and γ -neuroblasts are further elaborations of the α -type, and represent distinct phases in the ontogeny of the nerve cell.

(3) The γ -neuroblasts form the nuclei in the hind brain, the cells of the spiral ganglion and the ganglion of Scarpa, and the auditory epithelium. The β -neuroblasts become the neurilemma cells of the auditory nerve.

(4) The cytoplasm of the auditory syncytium is undifferentiated during the early stages, and represents the nascent or

achromatic phase of the nerve axons. This material becomes fibrillated longitudinally in a definite manner to form one continuous tract of neuro-fibrillæ uniting the neuro-epithelium with the cells in the hind brain, and represents the mature or chromatised phase of the axons. The latter are thus not unicellular but multicellular in origin. Further, each axon is probably represented at first by a single fibrilla. The unit of nerve structure is therefore not the axon but the fibrilla.

(5) Those portions of the auditory syncytium next to the hind brain and the otic vesicle become deprived of β -neuroblasts, and as a result there is no development of a neurilemma sheath at these points. The latter obviously represent sources of weakness, at which toxins may readily find an entrance, as already shown by Orr and Rows.

(6) The intimate association which the end organ bears to the hind brain during the early stages through the medium of the auditory syncytium never really becomes severed. We have therefore decided to abandon the idea of contiguity by synapse in favour of a direct anatomical continuity of the peripheral auditory tract.

AUTHORS' ABSTRACT.

**PRELIMINARY NOTE UPON THE CELL LAMINATION OF THE
(123) CEREBRAL CORTEX OF ECHIDNA, WITH AN ENUMERA-
TION OF THE FIBRES IN THE CRANIAL NERVES.**

EDGAR SCHUSTER, *Proc. Roy. Soc., B*, Vol. lxxxii., 1910.

FIVE distinct types of cortex are here described, and four of these are illustrated by drawings; their extent and boundaries, so far as could be ascertained from the limited material at the disposal of the author, are also described and figured.

AUTHOR'S ABSTRACT.

**CORTICAL LAMINATION AND LOCALISATION IN THE BRAIN
(124) OF THE MARMOSET. F. W. MOTT, E. SCHUSTER, and**

W. D. HALLIBURTON, *Proc. Roy. Soc., B*, Vol. lxxxii., 1910.

THIS paper consists of two parts: (1) histological—an account of the cell lamination and boundaries of the principal types of cortex; (2) physiological—an account of the results of the electrical stimulation of such parts of the hemisphere as were not inaccessible owing to the small and delicate nature of the brain. The

excitable area mapped out in this way was found to occupy the greater part of the lateral surface of the hemisphere lying above and in front of the Sylvian fissure. Stimulation of the lower region of this area evoked movements of the tongue, mouth, and face, while above the sequence of cortical representation was the same as that which usually prevails in mammals. Histologically the excitable area consists of two types: in one of these (motor area A) the Betz cells are large and conspicuous and a distinct layer of "granule" cells is absent; in the other (motor area B), which corresponds to face and head movements, not only are the motor cells smaller, but a layer of granules suggests that this part of the brain may be sensori-motor in function.

No part of the cerebral cortex when stimulated gave any movements of the external ear, nor were movements of the eye obtainable by stimulating the occipital pole. The absence of eye movements in this case may be due to the difficulty of the experiment, since the type of cortex usually associated with visual functions was found in and around the calcarine fissure and extending past the occipital pole for some distance into the lateral surface.

AUTHORS' ABSTRACT.

PHYSIOLOGY.

THE INFLUENCE OF THE BRAIN ON THE DEVELOPMENT
(125) **AND FUNCTION OF MALE SEXUAL ORGANS.** (*L'Influenza del Cervello sullo sviluppo e sulla funzione degli organi sessuali maschili.*) CARLO CENI, *Riv. Speriment. di Freniat.*, Vol. xxxv., p. 1.

THE author conducted his experiments exclusively on cocks. Ablation of one hemisphere was found to cause in both young and old birds involution of the sexual organs. This involution was immediate or delayed. The immediate involution when the animal survives the operation for some weeks is transitory, and in young birds amounts to an arrest of development which is scarcely specific to the testicles; whilst in adult cocks a notable diminution in size and weight of the testicles occurs. This is due to constriction of the seminiferous canaliculi, as the interstitial tissue is unaffected. The late involution occurs in animals in whom the early involution has disappeared and all signs of the operative sequelæ have been followed by a period of well-being. In these animals an intense testicular atrophy takes place, followed by general cachexia.

F. GOLLA.

ON THE EFFECTS OF ABLATION OF THE THYROID AND
 (126) **PARATHYROID GLANDS OF SHEEP.** (Sugli effetti della tiro-paratiroidectomia negli ovini.) P. ROSSI, *Riv. di Patol. Nerv. e Ment.*, Vol. xiv., F. 12, 1909.

THE results obtained may be thus summarised :

Sheep tolerate well partial parathyroidectomy, *i.e.* extirpation of three parathyroids—that is, one internal and the two external.

The extirpation of four parathyroids, the two external and two internal, is occasionally well borne, but on other occasions death supervenes in a series of convulsive attacks. In sheep and goats macroscopic nodules exist situated along the entire trachea, formed of accessory parathyroid tissue, and constituting an accessory parathyroid system which the author calls thymic. These glands normally reinforce the action of the four principal parathyroids, and explain why it is that the parathyroids may be frequently extirpated in sheep and goats without any marked symptoms supervening.

F. GOLLA.

PATHOLOGY.

OLIVO-RUBRO-CEREBELLAR ATROPHY. LEJONNE and LHER-
 (127) MITTE, *Nouv. Icon. de la Salpêtrière*, Nov.-Dec. 1909, p. 605.

THE patient was an old woman of sixty-three, who presented the syndrome of Weber (right hemiplegia and left internal rectus palsy). Unfortunately the clinical notes are incomplete. Post-mortem it was discovered that the cerebellum was very small. The features of this case, to which the authors have given a new descriptive name, are as follows :—

1. Absolute sclerosis and demyelination of the bulbar olives in their entire extent; disappearance of a great number of cerebello-olivary fibres, and consequent reduction in size of the corpora restiformia, without change in bulbar nerves or nuclei.

2. Global cerebellar atrophy, characterised histologically by the disappearance of all the Purkinje cells and many cells of the granular layer; in their place, neuroglial overgrowth. From the topographical standpoint the atrophy is generalised. Pronounced atrophy of the central white matter, with rarefaction of myelinated fibres.

3. Atrophy of the dentates, and almost complete disappearance of the superior cerebellar peduncles as far as the red nuclei; changes in the latter scarcely appreciable. The other nuclei of the cerebellum are intact.

No inflammatory or vascular changes were discoverable or recognisable. (The syndrome of Weber was accounted for by a lesion in the left cerebral peduncle.) S. A. K. WILSON.

PRIMARY TRACT DEGENERATION OF THE SPINAL CORD.

(128) (*Degenerazione Primaria Fascicolare della Midolla Spinale.*)

G. PANDOLFI, *Ann. di Nevrol.*, Anno 27, f. 5.

THE case, which is detailed at some length, was that of a woman of 55. Spasticity developed first in the left superior and inferior extremities, and then in the right lower extremity, and was accompanied by pains in the region of the cervical plexus, and a slight degree of atrophy in the left upper extremity, in its most distal portion. In the last period of the disease the case presented the appearance of spastic paraplegia, without trophic disturbances. At the necropsy a degeneration of the lateral columns, more intense on the left, was found, principally involving the crossed pyramidal tracts, the tract of Gowers, and the lateral ground tract, with some involvement of the spinal meninges.

The degeneration may be considered to have been of a primary nature, inasmuch as no lesion of origin was found on careful examination. The fibres affected show changes pointing to a gradual primary atrophy.

The degeneration showed the various phases of development. In the pyramidal tracts alone it had reached the stage of sclerosis, whilst in the other tracts only rare fibres were sclerotic, most of them appearing to be in the primary stage of degeneration.

The history of the patient would appear to suggest the probability of previous syphilis. The great vascularity of the sclerosed parts suggests a certain relation between the vascular condition and the lesions of the white matter. The vessels, besides being increased in number, showed well-marked thickening of their coats.

The lesions described are interpreted as being the expression of an intermediary stage in the evolution of a meningomyelitis of syphilitic origin, and what would appear to be a pure case of spastic paraplegia is really a stage in a more complex syndrome, the progress of which was interrupted by death. F. GOLLA.

CONTRIBUTION TO THE ANATOMO-PATHOLOGICAL STUDY

(129) **OF ASCENDING NEURITIS, WITH A CASE FOLLOWED**

BY AUTOPSY. J. DÉJÉRINE and ANDRÉ-THOMAS, *Rev. Neurol.*, April 15, 1909.

THIS is the first report of a complete post-mortem examination of the nervous system in this rare disease. It is the case of a woman

who, at the age of fifty-five, was pricked by a pin on the anterior surface of the left thumb towards the internal border. There was no lymphangitis, but pain gradually increased, so that she held the hand extended, the thumb abducted and extended, the fingers flexed, and the forearm semi-flexed and pronated. The fingers were atrophied and sclerodermatous. There were crises of irradiating pain every five minutes; there was hyperæsthesia of thumb and radial border of forearm, while pressure above the clavicle provoked pain. There was a little muscular atrophy, apparently most marked on thenar eminence. The radial and olecranon reflexes had disappeared; but the patient was tabetic, and these were absent from both sides, except for a feeble response of the right radial. It was an early case, or at least mainly a superior one, for the patellar reflex was present, although the Achilles response was abolished. There was myosis and reflex iridoplegia of both pupils.

The patient died of tuberculosis. On dissection the 7th and 6th cervical posterior roots were much atrophied on the left side, and the median nerve was of a greyish colour at the lower part of the forearm. No other abnormality could be distinguished, there being no swelling of the nerves, and the muscles being of normal colour.

Examined under the microscope, the 1st and 2nd palmar collaterals of the thumb contained mainly empty neurilemmæ, and even the myelinated fibres were undergoing degeneration, being irregular and swollen. Similar alterations were found in the external collateral palmar of the index, but in the cutaneous palmar some healthy fibres remained. No vestiges of inflammation were found in the nerve or tissues near the lesion.

In the median nerve, near the annular ligament, some degenerated fibres were scattered through each fasciculus, but there was no trace of inflammation, unless one can so regard small fibrous blocks, coloured more or less by fuchsin, which the authors suggest may be obliterated vessels, and a slight thickening of connective tissue between the nerve bundles. Similarly, at the middle of the forearm, but at the elbow, there were more healthy fibres, which further increased at the middle of the arm. The still numerous degenerated fibres had begun to tend to group themselves into separate fasciculi.

The ulnar nerve was healthy, except that the lower end contained some empty sheaths, and there were very few degenerated fibres in the palmar collaterals. The radials showed two small fascicules partially degenerated, while the cutaneous branch contained many empty sheaths. The other nerves and the nerves going to the muscles of the hand were unchanged, with the exception of that of the flexor brevis pollicis, which had some

empty sheaths and some regenerating fibres. The flexores breves digitorum profundus showed some degenerated fibres, both in the median and ulnar branches. The alterations in the muscles were only those of cachexia. In the brachial plexus there were two groups of degenerated fasciculi without trace of inflammation. Sections made just below the ganglia showed the 1st dorsal nerve healthy, the 8th cervical with very few degenerated fibres; the 7th cervical showed three completely degenerated bundles, while some were scattered in groups among the other bundles; the 6th nerve contained only a few diseased fibres, and the 5th was healthy. Between the ganglion and the cord the 7th posterior root was seen to contain very few myelinated fibres, and the degeneration was equal in the left and right root. The 6th left root was considerably atrophied, but on the right side the majority of the fibres were healthy. The 7th ganglion had lost a considerable number of nerve-cells, and showed fibrinous thickening of some vessels; in the 6th ganglion fewer cells had disappeared. In the cord the lesions were limited to the posterior columns. They were those of incipient tabes, and were confined to the external bandollette; but in the 7th root level there was complete degeneration of the radicular zone on both sides, with disappearance of reflex collaterals, leading to atrophy of the posterior horn. The secondary degeneration can be followed cephalad and mesad up the cord. At the 6th root level the degeneration is total only on the left, and there is deformation of the anterior horn here. The pia mater is everywhere slightly thickened, and is in places infiltrated by lymphocytes.

It is evident that the pains of this patient were not tabetic crises, for they were aggravated by pressure, and they clearly mounted from periphery towards plexus, attenuating in doing so. The authors discuss the nature of the process, excluding the hypothesis of degeneration at a distance, for this could not explain the degeneration of the collaterals in the case. Furthermore, this extent of degeneration does not occur after amputation. Nor can the ganglionic atrophy be explained by tabetic atrophy of the posterior root, for it is too intense. The peripheral neuritis of tabes cannot account for this case, for it seldom mounts as high as the ganglion. It seems evident, then, that a cause which produced the degeneration of the median travelled transversely to branches of radial and ulnar also, and that this noxa mounted along the median trunk just as does the toxine of rabies or tetanus. The complication of tabes prevents the tracing of the disease process as far as the cord. But the preponderance of the degeneration, even below the ganglion, in the 7th cervical nerve would tend to show that most of the sensitive fibres of the median belong to the 7th spinal root.

TOM A. WILLIAMS.

THE NERVOUS SYSTEM IN BACILLARY DYSENTERY. E. E.
(130) SOUTHARD and C. G. M'GAFFIN, *Boston Med. and Surg. Journ.*,
Nov. 11, 1909.

THE nervous systems of thirty-five cases of dysentery (nineteen sporadic and sixteen epidemic cases) were considered. The chronic lesions found in these cases were inconstant and varied. Organic disease of the central nervous system has no special effect in favouring a fatal issue in dysentery. Many brains of reduced consistence were found in the dysentery autopsies; but this change can scarcely be regarded as showing effects of dysentery toxin, since terminal or secondary invaders of the cerebro-spinal fluid were cultivated in the majority of the cases showing reduced consistence. Severe fatty degeneration, demonstrated by the Marchi method, was found in a number of instances, and was characteristic of those cases of dysentery in which ulcers were *not* found. These cases died after brief illnesses. It is an attractive hypothesis that the neurotoxic component was more powerful than the enterotoxic component of the toxin in these cases. Signs of lesion in the sympathetic plexus in the intestine were sometimes found, but were regarded as effects of the disease rather than as playing much part in its mechanism. On account of the differential effect of Shiga toxin upon the vessels in the anterior horns of the spinal cord of the rabbit, it was interesting to study spinal cords in the human cases. The cords of all the epidemic cases (sixteen) were examined at numerous levels, but no hæmorrhagic lesions were found. In two of the sporadic cases thrombosis of the superficial cerebral arteries was noted. The general relations of these findings are discussed in Article X. of the Report, "Conclusions from Work on the Danvers Dysentery Epidemic of 1908."

AUTHORS' ABSTRACT.

**ON THE VALUE OF THE METHOD OF PRECIPITATION OF
(131) NERVOUS SUBSTANCE AS A RETICULUM AND ON THE
RESISTANCE OF THE NEUROFIBRILS.** (Sul valore del
modo di precipitare della sostanza nervosa sotto forma
reticolare e sulla resistenza delle neurofibrille.) CARLO
TODDE, *Riv. Speriment. di Freniat.*, Vol. xxxv., p. 414.

THIS paper is an answer to the profoundly disturbing work of Pighini, who, experimenting with films formed of extracts of nervous matter, claims to show that reticular formation results from the gelification of the colloids of nerve substance under the influence of the re-agents used in the methods of Cajal and Donaggio.

The author has repeated and amplified his methods. He finds

that the reticular formation described by Pighini is not specific to pyridine and silver nitrate, but can be produced by alcohol. This reticular formation may be also obtained in cortical substance by heat coagulation. The same phenomenon of precipitation is observed when cerebral substance is submitted to prolonged putrefaction. The reticulum of nerve cells often shows a notable resistance to boiling, the method of Cajal often giving a normal appearance in tissues which have been boiled for thirty minutes.

F. GOLLA.

**A STUDY OF THE CEREBRO-SPINAL FLUID IN THE
(132) INFECTIVE DISEASES OF THE MENINGES, WITH
SPECIAL REFERENCE TO CEREBRO-SPINAL FEVER.**

ANDREW CONNAL, *Quart. Journ. of Med.*, Jan. 1910, Vol. iii.,
No. 10, p. 152.

THIS is a very full account of the examination of over 1000 specimens of fluid from cases of acute pyogenic and tubercular meningitis in Glasgow. Of the acute pyogenic cases, 152 were meningococcal, 4 pneumococcal, 3 streptococcal, and 2 of mixed infection from fracture of the base of the skull. There were 69 tuberculous cases. Lumbar puncture was performed at regular intervals and a routine observed in the examination of the fluid. The results obtained are tabulated as follows:—

Physical Characters.

(1) *Intracranial pressure.*—This is increased throughout the whole course, and persists for some time in cases which recover. Withdrawal of fluid in cerebro-spinal fever gives good results, the pressure is reduced, and fresh fluid is formed which dilutes the infective material. In early stages it greatly relieves symptoms, and in late ones checks the formation of hydrocephalus. In tubercular cases the most that can be attained is amelioration of headache and restlessness.

(2) *Turbidity.*—The normal transparency is lost in meningitis from any cause; if decidedly turbid it means a purulent exudate. The degree of turbidity, along with the height of the pyrexia, are reliable guides to the progress. In tubercular cases it is at most a little opalescent.

(3) *Colour.*—Yellow or greenish in the early stages of cerebro-spinal fever, in mild or organising cases whitish. It is sometimes straw-coloured or reddish-brown from hæmorrhage. In tubercular cases always colourless.

(4) *Consistence.*—In the majority of cases there is little viscosity, even when the fluid is markedly turbid. A new type of meningitis

is described, met with both in cerebro-spinal fever and tubercular meningitis, in which the fluid is viscid, contains a high percentage of albumen, and rapidly coagulates into a jelly.

(5) *Specific Gravity*.—The range is very small and the estimation does not appear to have any practical value.

(6) *Coagulum*.—In turbid fluids the clots are "coarse cobweb," in opalescent fluids "delicate fibrillar," and in clear fluids "fine cotton-wool." Clot is one of the first signs of meningitis, and the last to disappear in those cases which recover. Rarer varieties are the jelly-like clot and innumerable small shreds of fibrin in sub-acute or chronic cases.

(7) *Sediment*.—Only in yellow turbid fluids—extensive acute pyogenic cases.

Chemical Tests.

(1) *Reaction*.—Always alkaline, but less so than that of normal fluid, especially in meningococcal cases, from the neutralising action of lactic acid which is formed from the dextrose normally present.

(2) *Amount of albumen*.—In meningitis there is always an appreciable quantity, as a rule proportional to the acuteness. In tubercular cases, however, it varies irregularly.

(3) *Sugar*.—Absence of reducing sugar is pathognomonic of meningitis—reappearance usually indicates healing. It is rarely entirely absent in tubercular cases.

Microscopical Characters.

(1) *Leucocytes*.—The cellular content is greatly increased, in cerebro-spinal fever especially the polymorphs. The percentage decreases as the disease subsides, at the termination the mononuclears are predominant and they persist for some time. In tubercular cases the cells are mainly mononuclear.

(2) *Endothelial cells*.—These indicate meningitis, and their number depends on the severity of the inflammation.

(3) *Organisms*.—In simple acute cases the meningococcus is at first extra-cellular, then ingested by leucocytes. This chain of events is usually broken, however, by the characteristic remissions. The tubercle bacillus can be demonstrated in most of the cases of tuberculous meningitis.

(4) *Crystals*.—Minute square or diamond-shaped bodies, colourless and highly refractile, composition unknown, were found in 50 per cent. of the tuberculous fluids, and only in these. A further report on them is promised.

J. H. HARVEY PIRIE.

**ON THE OCCURRENCE OF ERYTHRO - AGGLUTININS AND
(133) ERYTHRO - OPSONINS IN THE BLOOD OF CERTAIN
CASES OF CEREBRO-SPINAL MENINGITIS. A. S. M. MAC-
GREGOR, *Journ. Pathol. and Bacteriol.*, Vol. xiv., 1909, p. 184.**

IN the course of observations on the opsonic index in fifty-eight cases of cerebro-spinal meningitis it was noticed that in four instances the patients' sera caused the author's red blood corpuscles to be phagocytosed by his leucocytes. A further analysis of this phenomenon led to the following results:—

(1) Phagocytosis never occurred without agglutination of the red corpuscles, but the reverse was observed, *i.e.* where erythro-phagocytosis appeared some days after erythro-agglutination was first noted.

(2) The erythro-opsonins were destroyed by heat at 57° C. The agglutinins, however, resisted this temperature. Most probably the opsonic manifestation is dependent on the presence of complement, as Muir and Martin have shown in the case of the normal bacterial opsonins.

(3) The individuality of the erythrocytes is an essential factor. Thus the susceptible red corpuscles were those of the author (the erythrocytes of certain other persons being resistant to both agglutination and phagocytosis), and they were taken up both by the patients' and by the author's leucocytes under the influence of the patients' sera. Auto-agglutinins and opsonins were not observed. Accordingly there is no evidence that these phenomena were responsible for the wasting associated with cerebro-spinal meningitis.

(4) The leucocyte is not an indifferent factor, since the sensitised blood corpuscles were taken up by the leucocytes of one person, but not by those of two other normal persons. Only a proportion of the leucocytes, even of a suitable person, act as phagocytes of the red corpuscles. The same leucocytes as take up the red corpuscles ingest the meningococci.

(5) Erythro-agglutinins and opsonins occurred in cases with marked toxic symptoms, *e.g.* great wasting and excess of nitrogen in the urine, and especially in the chronic stage of the disease. In one case the erythro-opsonin and agglutinin persisted during convalescence. Of the four cases exhibiting this phenomenon, one recovered.

(6) On the appearance of hæm-opsonins there occurs a fall of the opsonic index for meningococci, and after the hæm-opsonin disappears the latter rises again.

This is not purely a mechanical phenomenon, since the same result with regard to the meningococcus index was obtained on employing, as the source of leucocytes, a specimen of insuscep-

tible blood, which showed with the sera of other cases a marked phagocytosis of meningococci.

(7) The ingested fragments of erythrocytes were always easily distinguishable from eosinophile granules.

(8) Erythro-opsinins and agglutinins are to be regarded as metabolic accidents of unknown significance.

AUTHOR'S ABSTRACT.

THE PRESENCE OF ORGANISMS IN THE BLOOD AND

(134) CEREBRO - SPINAL FLUID IN MENTAL DISEASE.

WINFRED MUIRHEAD, *Journ. Ment. Sc.*, Jan. 1910.

IN the conflicting evidence which has accumulated in recent years as to whether the presence of organisms is the essential factor in the production of certain insanities or not, it seemed desirable to obtain clearer proof of a causal relationship. One method of solving this difficulty seemed to be to confine the cultural investigations to important fluids, namely, the blood and cerebro-spinal fluid, to obtain evidence as to whether one kind of organism alone was associated with one type of insanity and the frequency of this association; and, finally, to discover if this kind was never found in any other type of insanity. Organisms were recovered by the author from these fluids. A bacillus of the diphtheroid group was isolated in both general paralysis of the insane and in acute delirious insanity in about one-third of the cases, and this organism, which has been called "Organism A," is identical in both these diseases. These results throw considerable doubt on the importance of the organism as an essential cause.

During life, from twenty-five cases of general paralysis, "Organism A" was isolated in pure culture from the blood in eight, or 32 per cent., and in three of these eight it was also obtained from the cerebro-spinal fluid. It was, however, only isolated in 7·5 per cent. of the total number of lumbar punctures which were performed. The blood and cerebro-spinal fluid were withdrawn as soon as possible after the commencement of a congestive seizure, all antiseptic precautions being observed. Blood films stained from three of these cases showed a diphtheroid bacillus. From twenty-seven post-mortems of general paralysis, "Organism A" was isolated in pure culture in eight, or 29·6 per cent., seven cases from the cerebro-spinal fluid, and in only one from the heart blood. In conclusion, from a bacteriological examination of fifty-two cases of general paralysis, ante-mortem and post-mortem, "Organism A" was isolated in sixteen, or 30·7 per cent.

In delirious insanity "Organism A" was recovered from the blood in seven out of twenty cases, or 35 per cent. These patients were all acutely ill, four of them being young women with chorea. One of these, a girl of sixteen, suffering from rheumatic fever, had a mixed infection, "Organism A" being associated with a delicately growing diplococcus.

In a case of rapidly progressive dementia, with excitement which clinically resembled general paralysis, during life both from the blood and the fluid of a hæmatoma auris respectively, there was isolated a streptothrix associated with a coccus on one occasion and a streptothrix with a Hoffman's diphtheroid on another. Post-mortem, six months later a streptothrix in pure culture was obtained from the cerebro-spinal fluid.

Using the "Organism A" for vaccine treatment failed to make any difference, and the opsonic index was found too variable to draw any reliable conclusions. Cultures made from four normal controls were uniformly sterile.

If this bacillus be the essential factor in the production of general paralysis and delirious insanity, why are the symptoms and course of these two diseases so very different? Recognising the high incidence of syphilis in the former, may we reckon it a contributory if not a dominating agent, which has the power of giving to cases of general paralysis those characteristic symptoms which differentiate it from all other types of insanity?

On the other hand, the percentage of cases where this organism was obtained in both types of insanity is not large. The type of cases in which it was isolated was rapidly progressive—general paralysis and acutely ill delirious insanities where the reactive powers were extremely low and consequently the invasion of organisms would be easy. That mixed invasions did sometimes occur proves still further the lowered resistance of these patients.

The fact that vaccine treatment was inefficacious rather strengthens the deduction, that whatever the significance of this bacillus may be, it is probably of no great importance.

Finally, it may be possible that this organism is something more than a mere concomitant, and that some of the symptoms may be explained by the fact, supported by experimental evidence, that this type of bacillus has a certain selective affinity for the nervous system and produces neuro-toxins.

In conclusion, the evidence advanced is not considered sufficient to justify a statement that "Organism A" is the cause of general paralysis and delirious insanity. The cultural reactions of "Organism A" are described in the paper with micro-photographs, including those of the plate colonies of "Organism A," also bacillus *paralyticans brevis* and *longus*.

AUTHOR'S ABSTRACT.

CLINICAL NEUROLOGY.

CHRONIC ORGANIC DISEASES OF THE CENTRAL NERVOUS
 (135) **SYSTEM AFTER TRAUMA.** (*Chronische organische Krankheiten des Zentralnervensystems nach Trauma.*) SCHULTZE,
Wien. med. Wchnschr., No. 49, Dec. 4, 1909, p. 2843.

THIS is a short paper; it divides the effects of trauma on the central nervous system into mental and physical. The former is chiefly due to fright and anxiety, and affects the vascular mechanism and the heart, either directly or through the central nervous system. It tends rather to produce acute changes, and it is doubtful if chronic conditions can be thus originated. In regard to the latter it is necessary to distinguish between central and peripheral effects. A peripheral affection may cause an ascending neuritis, but it is not yet definitely proved that this may lead to chronic changes in the central nervous system. That tabes may be the result of a peripheral injury is improbable, although its relation to syphilis is not yet absolutely proved. A genuine progressive paralysis, being associated in almost 100 per cent. of cases with a positive Wasserman reaction, need also not be considered. The relation of trauma to multiple sclerosis is more difficult of interpretation, since the origin of this disease is uncertain, but it may be influenced by trauma. Syringomyelia, on the other hand, may be considerably influenced by trauma, especially in people with a hereditary tendency to changes in the cord. Chronic brain processes can only be slightly discussed; a chronic pachymeningitis and a chronic leptomeningitis may result from trauma, as also a chronic hydrocephalus. Epilepsy may also be produced, but our knowledge of arteriosclerosis is too indefinite to admit of any statement in this direction. Traumatic apoplexy occurring later may be the result of a local inflammatory process, afterwards causing aneurysmal dilatation, etc. Chronic cerebral abscess is rarely the result of trauma, and cerebral tumour has quite a different origin.

A. NINIAN BRUCE.

POLYNEURITIS IN GASTRIC ULCER. (*Polynévrite dans l'ulcère*
 (136) *gastrique.*) COURÉMÉROS and CONOS, *L'Encéphale*, Nov. 10,
 1909, p. 423.

THIS interesting case is comparable to those reported by Klippel and Pierre Weil. The symptoms of gastric ulcer were classical and unmistakable, while there very gradually supervened other symptoms indicative of a toxic polyneuritis, for which no cause

whatever could be assigned. The patient was an abstainer. The authors pass in review various possibilities, and conclude by attributing the polyneuritis to the gastric ulcer, without any explanation, however theoretical, of the association.

S. A. K. WILSON.

MEDIAN PARALYSIS AS A LATE SEQUEL OF AN INJURY (137) TO THE ELBOW JOINT. (Ueber Medianuslähmung als Späterfolge einer Ellenbogengelenkverletzung.) BERNHARDT (Berlin), *Neurolog. Centralbl.*, Feb. 15, 1910, S. 178.

THE case was that of a woman of 42, who presented an atrophic palsy of the median supply, with sensory disturbances in the same distribution. There was also slight paresis of the ulnar nerve on the same side. The symptoms were of two years' duration. More than thirty years previously the patient had sustained an injury to the elbow joint of this arm. X-ray examination showed a fracture of the head of the radius and a "knockenauflagerung" at the internal condyle and olecranon. This case shows that after fractures and dislocations at the elbow joints and fractures of the bones of the forearm, especially of the upper end of the radius, symptoms referable to the median nerve may appear, as is recognised in connection with the ulnar nerve, a long time after the injury.

EDWIN BRAMWELL.

FOUR CASES OF CERVICAL RIB, TWO OF THEM FLAIL-LIKE (138) FRANCINE, *Amer. Journ. Med. Sc.*, Jan. 1910, p. 108.

THE author gives a brief account of four cases of cervical ribs, in three of which no symptoms had occurred. The interest of his observations lies chiefly with two of the cases, in which definite jointed cervical ribs occurred. Reasons are given against regarding the peripheral part of the jointed ribs as exostoses.

C. M. HINDS HOWELL.

NERVOUS SEQUELÆ OF DIPHTHERIA. (Nervöse Störungen im Anschluss an Diphtherie.) E. MEYER, *Münch. med. Woch.*, 1910, p. 165.

MEYER exhibited before the Strasburg Medical Society four children of the same family, all of whom showed nervous disturbances after diphtheria. Two presented signs of polyneuritis (loss of knee jerks and ataxia), one palatal palsy, and one sixth-nerve paralysis. This high incidence of nervous complications may possibly have been due to the fact that all the children were beer drinkers, their daily consumption being half a litre (*cf. Review*, 1908, p. 664).

J. D. ROLLESTON.

INFANTILE TABES. (*Ein Beitrag zur infantiler Tabes.*) W. SPITZ-
(140) MÜLLER, *Med. Klinik*, 1910, p. 139.

SPITZMÜLLER records a case in a boy, aged 13 years, who had suffered from incontinence of urine for four years, and had had an unsteady gait for a year. His pupils reacted neither to light nor to accommodation. The fundi were normal. The knee jerks and cremasteric reflexes were absent, and there were areas of hypo-æsthesia and anæsthesia on the inner side of both thighs. As in Stiefler's cases (*v. Review*, 1909, p. 268), signs of infantilism were present. Though his parents and three sisters were healthy, and he himself showed no obvious signs of syphilis, his blood gave a positive Wassermann's reaction.

J. D. ROLLESTON.

THE CO-EXISTENCE OF SYPHILITIC LESIONS WITH TABES
(141) **AND GENERAL PARALYSIS.** (*De la coexistence d'accidents syphilitiques avec le tabes et la paralysie générale.*)
M. RIVAILLON, *Thèses de Paris*, 1909-10, No. 45.

RIVAILLON has collected thirteen cases of tabes and eight of general paralysis which were associated with manifestations of tertiary syphilis. In most of the cases the patients denied or were unaware of their infection, or else had had a very inadequate treatment (*cf. Review*, 1906, p. 748; 1907, p. 633; and 1909, p. 31).

J. D. ROLLESTON.

THE ÆTIOLOGY OF ACUTE EPIDEMIC INFANTILE PARA-
(142) **LYSIS.** (*Zur Aetiologie der akuten epidemischer Kinderlähmung.*) P. KRAUSE (of Bonn) and E. MEINICKE (of Hagen),
Deut. med. Woch., No. 42, 1909, p. 1825.

THE writers were unable to discover the causal agent of infantile paralysis by the usual microscopical and cultural methods. Attempts to inject mice, guinea-pigs, and doves were unsuccessful. Experiments with monkeys were not yet completed. The most interesting results were obtained with rabbits, in which inoculation was followed after a fairly long interval of apparent health by definite nervous phenomena and death. The material injected consisted of brain, cerebro-spinal fluid, cord, blood, spleen, and urine from fatal cases of infantile paralysis. The subdural intravenous and intraperitoneal routes were used.

J. D. ROLLESTON.

EXPERIMENTAL STUDIES ON THE ETIOLOGY OF ACUTE
(143) POLIOMYELITIS. I. STRAUSS and F. M. HUNTOON, *New*
York Med. Journ., Jan. 8, 1910, p. 64.

THESE authors have produced poliomyelitis in *Macacus rhesus* by intraperitoneal inoculation of the cord from a fatal human case, but failed to subinoculate by the same method. The cerebro-spinal fluid of acute cases does not appear to contain the virus in an infective state. The reported bacterial findings are either contaminations or secondary invaders. In cases clinically recognisable negative results followed on attempts to produce infection in the monkey by intraperitoneal and intradural inoculation of the blood. The disease appears very like rabies, and must now be definitely classed among the infective diseases.

J. H. HARVEY PIRIE.

THE PROGNOSIS OF ACUTE ANTERIOR POLIOMYELITIS. (Zur
(144) Prognose der Poliomyelitis anterior acuta.) M. BERLINER,
Wien. klin. Woch., No. 21, 1909, p. 751.

THIS paper is based on the study of fourteen cases treated in the St Anna Children's Hospital at Vienna. Four died, but, as in Wickman's cases, all the deaths occurred within the first fourteen days. The prognosis, therefore, within the first fortnight should be guarded; afterwards it is favourable as regards life. (The abstracter found a precisely similar occurrence in diphtheria. In fifty-five cases of cardiac paralysis the symptoms always developed before the third week (*v. Review*, 1909, p. 105).) Unlike Wickman, who found that the mortality was higher among older patients, Berliner had three fatal cases in infants aged 15, 16, and 24 months. The remaining case was aged 9 years. All were males. Three of the survivors showed no improvement. There were seven cases who had shown signs of generalised involvement of the nervous system directly after the onset. The remaining cases showed considerable improvement. They had also had a severe attack, for no abortive cases were brought to the hospital. It is important to recognise that improvement may not start until months after the beginning of the disease, and then proceed rapidly.

J. D. ROLLESTON.

EXPERIMENTAL TRANSMISSION OF ACUTE ANTERIOR
(145) POLIOMYELITIS TO MONKEYS. (Experimentelle Ueber-
 tragung der Poliomyelitis anterior acuta auf Affen.) W.
 KNOEPFELMACHER, *Med. Klinik*, No. 44, 1909, p. 1671.

THE intra-peritoneal injection into a *Macacus rhesus* of portions of the spinal cord from a fatal case of infantile paralysis produced a

typical attack of acute poliomyelitis, though the monkey was less severely affected than the child. The animal was killed, and typical changes were found in the cord. Attempts to infect a second monkey with the cord of the first were unsuccessful.

J. D. ROLLESTON.

EPIDEMIC POLIOMYELITIS IN MONKEYS. S. FLEXNER and (146) P. A. LEWIS, *Journ. Amer. Med. Assoc.*, Jan. 1, 1910, p. 45.

In previous communications in the *Journal* these authors have shown that the disease is transmissible from monkey to monkey by intra-cerebral inoculation, and also that it can be transmitted by inoculation into the sciatic nerve, into the blood, the peritoneum, or subcutaneously, also that the virus was filterable through a Berkefeld filter and withstood glycerination. The activity of the virus is now being studied. It has been shown by Keefe to withstand freezing for forty days and to remain active in a cord kept at 4° C. for fifty days. The spinal cord of an affected monkey still transmits the disease when dried for a week over KOH in a dessicator. The activity of filtrates has been confirmed and the possibility of their action being due to soluble toxic bodies excluded. Various serum-containing fluids have become turbid after inoculation and incubation; none of them contained visible bacteria nor recognisable bodies when examined in the dark-field microscope.

Does an attack afford immunity against re-infection? It is too early to answer this yet, but they have some evidence that it does. Simultaneous injection beneath the skin of a virus altered by heating does not appear to modify the course of an ordinary intra-cerebral inoculation.

Many other species of animals have been experimented on, but in none of them has there been any development of poliomyelitis. They mention (in connection with the sensory cutaneous disturbances often noted in human beings) that they have found lesions in the inter-vertebral ganglia of the paralysed monkeys similar to those present in the spinal cord, in every instance in which they have been looked for.

J. H. HARVEY PIRIE.

ATTEMPTS TO CULTIVATE THE PARASITE OF INFANTILE (147) PARALYSIS. (*Essais de culture du parasite de la paralysie infantile. Note préliminaire.*) C. LEVADITI, *La Presse Méd.*, Jan. 19, 1910, p. 44.

FILTRATES obtained from the cord of an infected monkey failed to give any growth on ordinary media. But after cultivation by

Loeffler's method, Levaditi found large numbers of corpuscles, rounded or oval, often in pairs or in clumps, and of a red colour. They are extremely small, do not stain with ordinary aniline dyes, although with long-applied dilute fuchsine they stain pale pink or appear as clear clots surrounded by a reddish zone. Similarly with Giemsa they take on a pale blue tint.

J. H. HARVEY PIRIE.

THE RESULTS OF BACTERIOLOGICAL INVESTIGATION IN

(148) **POLIOMYELITIS.** (*Bakteriologische Untersuchungsergebnisse bei Poliomyelitis.*) K. POTPESCHNIGG, *Wien. klin. Woch.*, 1909, p. 1334.

In the cerebro-spinal fluid of fourteen cases Potpeschnigg found Gram-positive cocci, most of which were in pairs, but here and there were arranged in tetrads. They were present both in the freshly drawn fluid and in cultures. In one case a diplococcus was cultivated from the blood on the first day of an attack of poliomyelitis. The best growth was obtained by smearing agar plates with bouillon.

Similar findings had been made by F. Schultze, Concetti, Looft, Detlhoft, and Geirvold.

The relation of these micro-organisms to Heine-Medin's disease and to meningococci is still undetermined. J. D. ROLLESTON.

ON THE ALLEGED RELATIONS BETWEEN ACUTE ANTERIOR

(149) **POLIOMYELITIS AND EPIDEMIC CEREBRO-SPINAL MENINGITIS.** (*Sur les prétendues relations entre la Poliomyélite antérieure aiguë et la méningite cérébro-spinale sous forme épidémique.*) IVAN WICKMAN, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, xxviii., 1909, p. 973.

COMMENTING on a recent communication made by Netter on the identity of acute poliomyelitis and epidemic cerebro-spinal meningitis (*v. Review*, 1910, p. 35), Wickman shows that no chronological connection exists between them in the case of Sweden, where epidemics of acute poliomyelitis have been carefully studied since 1881.

Statements made by some American writers about the simultaneous epidemics of the two diseases are probably due to their having mistaken the meningeal form of Heine-Medin's disease for epidemic cerebro-spinal meningitis. J. D. ROLLESTON.

REGARDING PARAPLEGIC SYMPTOMS CAUSED BY A
 (150) **LATENT AORTIC ANEURISM. A CONTRIBUTION TO**
THE DIFFERENTIAL DIAGNOSIS OF SPINAL CORD
TUMOURS. (Ueber Querschnittslähmungen durch latente
 Aortenaneurysmen. Ein Beitrag zur Differentialdiagnose des
 Rückenmarkstumors.) EDUARD MÜLLER (Marburg), *Neurolog.*
Centralbl., Feb. 15, 1910. S. 180.

A LABOURER, aged 54, who thirty-five years before had had a chancre, had for nine months complained of very severe pains in the region of the left shoulder-blade, extending around the chest. Paraplegia with pronounced sensory disturbances slowly developed.

Upon examination there was marked tenderness of the upper vertebral spines on percussion, paresis of both lower extremities of the spastic type, and almost complete anaesthesia to all forms of stimuli up to the level of the nipple.

A pressure paraplegia was diagnosed. There was no evidence of tubercle. A positive Wassermann suggested the possibility of a syphilitic lesion, but a course of mercury and potassium iodide produced no benefit. There were no indications of aneurism (details of the negative examination are recorded) at this time. In the absence of spinal deformity, and of evidence of a new growth in the stomach, prostate or elsewhere, a probable diagnosis was made of a primary meningeal tumour situated in the upper dorsal region.

On the day previous to that on which the patient was to have been transferred to the surgical clinic it was observed that the larynx and trachea were displaced somewhat to the right, that there was a tympanitic percussion note with loud bronchial breathing to the right of the manubrium sterni, that there was paralysis of the left vocal cord, and the left pupil was slightly larger than the right. An X-ray examination showed the presence of a large aneurism involving the ascending and transverse portions of the arch and the commencement of the thoracic aorta.

This case illustrates the importance of an X-ray examination in all cases of pressure paraplegia. EDWIN BRAMWELL.

ACUTE MENINGITIS IN RELATION TO THE PUERPERIUM.
 (151) (Des méningites aiguës en rapport avec l'état puerpéral).
 E. L. F. PELICAND, *Thèses de Lyon*, 1908-9, No. 9.

THIS thesis, written by a pupil of Commandeur, whose paper was recently abstracted in this *Review* (1908, p. 599; cf. also 1909, p. 276), contains the histories of twenty-six cases collected from

literature, eight of which were tuberculous meningitis and the remainder suppurative meningitis due to various causes, of which the pneumococcus was the most frequent. Tuberculous meningitis runs a more insidious and rapid course in pregnant than in other adults. The period of pregnancy at which it developed was in three cases four and a half months, in one case six months, in two cases seven and a half months, and in one case at term. Four of the patients were primiparæ, the rest had given birth to two or more children.

Suppurative meningitis is more common in multiparæ.

J. D. ROLLESTON.

**A CASE OF CHRONIC CIRCUMSCRIBED LEPTOMENINGITIS
(152) OF THE CENTRAL REGION. (Ueber einen operierten Fall
von Leptomeningitis chronica circumscripta der Zentralregion.)
V. SARBÓ, *D. med. Wchnschr.*, Jan. 6, 1910, p. 28.**

THE patient was a young man of 24 years, without history of syphilis or alcoholism, but who had been very backward in learning to speak as a child. At the age of nineteen he had an apopleciform attack with right-sided hemiplegia and aphasia. All the symptoms cleared up in a few weeks, and he was able to pursue his legal studies. At the age of twenty-three he noticed weakness of the right arm, which rapidly developed again into hemiplegia and aphasia. The aphasia soon disappeared, but the right hemiplegia remained. At the age of twenty-four he had a typical epileptiform fit, and afterwards became mentally dull and depressed. On examination he showed the ordinary signs of an old right hemiplegia with increased reflexes. These repeated attacks of weakness, followed at last by the epileptiform fit, led Sarbó to diagnose a chronic meningeal condition. Operation was advised, and was carried out by Krause at Berlin. At the operation there was distinct leptomeningitis over the central region of the cortex, with œdema of the arachnoid. The subjacent brain cortex appeared normal, and repeated punctures revealed no tumour. After the operation the patient's psychical condition improved. Three months later, however, he had two more fits. The hemiplegic arm is flaccid instead of spastic, but still with increased reflexes as before.

PURVES STEWART.

**CHRONIC CIRCUMSCRIBED SEROUS MENINGITIS OF THE
(153) BRAIN. (Zur Meningitis chronica serosa circumscripta
(cystica) des Gehirns.) H. OPPENHEIM and M. BORCHARDT,
D. med. Wchnschr., Jan. 13, 1910, S. 57.**

THE case was that of a little girl, whose age is not stated, who, some four months after a fall from a tramway car, developed the ordinary

signs, both general and local, of a growth in the right cerebellar region: headache, vomiting, double optic neuritis, ataxic gait, dysdiadocokinesis of the right hand, impairment of hearing in the right ear, and slight right-sided facial paresis. There was also a pulsating bruit on auscultation over the right cerebellar region. Under a course of mercurial inunction these signs almost completely cleared up, save for slight atrophy of the right optic disc. Six months later the symptoms and signs reappeared, and under treatment by iodide of potassium another remission occurred. Nine months later again the headache, vomiting, and tinnitus reappeared with great intensity. Lumbar puncture aggravated the symptoms, and, accordingly, operation was undertaken in the right cerebellar region. At the operation a large gush of clear fluid escaped from the meshes of the arachnoid, but no tumour was found. Healing was uneventful, and seven months later the patient was apparently quite well save for optic atrophy, mainly in the right eye.

PURVES STEWART.

MENINGOCOCCAL MENINGITIS WITH STERILE CEREBRO-
(154) **SPINAL FLUID REVEALED BY THE PRECIPITO-RE-**
ACTION. (*Méningites méningococciques à liquide sterile et*
amicrobien, révélées par le précipito-diagnostic.) H. VINCENT
and E. COMBE, *C. R. de la Soc. de Biol.*, lxxvii., 1909, p. 566.

A RECORD of two cases in which the cerebro-spinal fluid, though turbid and containing a predominance of polymorphonuclears, showed a complete absence of meningococci both on direct examination and after cultivation of the clot. Vincent's reaction, however, was positive, and serum treatment was followed by recovery; which in one case was immediate and the other within a week (*v. Review*, 1909, p. 543).

Probably in such cases the localisation of the organisms is exclusively cerebral, and the cellular reaction seen in the puncture fluid is due entirely to their toxins.

J. D. ROLLESTON.

VISCERAL LESIONS IN CEREBRO-SPINAL MENINGITIS. (Re-
(155) **cherches des lésions viscérales dans la méningite cérébro-spinale.**)
A. FAUVET, *Thèses de Paris*, 1909-10, No. 137.

FAUVET thinks that there is too great a tendency to regard meningococcal cerebro-spinal meningitis as a local disease and to neglect the study of its visceral lesions. It has been shown that epidemic cerebro-spinal meningitis may be preceded by a septicæmic stage, and that the whole disease even may be limited to this stage, as

in the cases reported by Bovaird and Netter (*v. Review*, 1909, pp. 419 and 741).

The thesis contains the histories of eight cases, two of which are original, in which lesions of the various organs are described.

J. D. ROLLESTON.

CEREBRO - SPINAL MENINGITIS WITH MENINGOCOCCAL

(156) **SEPTICÆMIA.** (Quelques recherches sur un cas de méningite cérébro-spinale avec méningococcémie.) E. GAUJOUX, W. MESTREZAT, and P. DELANOË (de Montpellier), *An. de méd. et Chir. Inf.*, 1909, p. 649.

A BOY, aged 10 years, was admitted to hospital with symptoms of meningitis which had developed thirty-five days previously. On the second day hemiplegia had occurred, but had disappeared at the end of the first week (*v. Review*, 1909, p. 545). The cerebro-spinal fluid on admission was slightly turbid and showed a predominance of lymphocytes and a few meningococci on direct examination and in cultures. Subsequently the polymorphonuclears predominated, and finally decreased as improvement set in under serum treatment. Blood from the arm yielded a pure culture of meningococci. The disease was complicated by otitis, nephritis, and endocarditis, but complete recovery finally took place.

J. D. ROLLESTON.

DEATH FROM THE SERUM DISEASE IN MENINGOCOCCAL

(157) **CEREBRO - SPINAL MENINGITIS TREATED BY FLEXNER'S SERUM.** (Un cas de mort par accidents sériques chez un malade atteint de méningite cérébro-spinale à meningococques et traité par le sérum de Flexner.) CURTOIS-SUFFIT and DUBOSC, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, xxviii., 1909, p. 936.

A MAN, aged 39, suffering from epidemic cerebro-spinal meningitis, received five injections of Flexner's serum. On the day after the last injection the temperature suddenly rose to 104·8°, and the patient had an attack of dyspnoea, without any physical signs in the chest. Another injection was given, and five days later pains in the joints developed, and the meningeal symptoms became more marked. In spite of a favourable change in the cerebro-spinal fluid consisting in disappearance of the meningococci and replacement of polymorphonuclears by mononuclears, another 30 c.c. were injected. Death occurred three days later, being preceded by aggravation of the meningeal symptoms. The autopsy revealed

an absolutely normal condition of the cerebral and spinal meninges.

This case is recorded as illustrative of the dangers of mistaking symptoms due to serum for those due to cerebro-spinal meningitis (*v. Review*, 1909, p. 552). J. D. ROLLESTON.

ON AN UNCOMMON TONGUE SYMPTOM IN TWO CASES OF (158) INFANTILE HEMIPLEGIA. (Sul valore di un insolito comportamento della lingua in due casi di emiplegia infantile.) GIUSEPPI CORBERI, *Ann. di Nevrol.*, Anno 28, F. 4.

Two cases of infantile hemiplegia are described. In both there was arrest of psychical development and epilepsy, with contracture and trophic disturbances in the upper extremity, and with deviation of the tongue to the opposite side of that of the paralysed limbs. The anamnesis alone would lead to a diagnosis of infantile cerebral paralysis in both cases; in the second case it was congenital. The movements of the tongue were examined according to the schema of Flesch, and the conclusion drawn was that in the first case, there was paralysis of the right inferior longitudinal muscle (N13), paralysis of the right genioglossus (N5), paralysis of the right styloglossus (N7), with a left hemiplegia. In the second case, paralysis of the left longitudinal inferior muscle (N13), paralysis of the left genioglossus (N5), paresis of the right styloglossus (N7).

To explain these observations by a single lesion it would be necessary to assume a double crossing of the fibres of the hypoglossal. F. GOLLA.

HYPERPITUITARISME ET HYPOPITUITARISME. O. LAURENT, (159) *Journ. de Neurol.*, Dec. 20, 1909, p. 461.

THIS is a précis of the current views as to the structure and functions of the hypophysis. After a short description of its anatomical sub-division into an anterior lobe containing chromophile cells, a pars intermedia, and a posterior lobe mainly consisting of neuroglia, Laurent recalls the development of the gland and its forms in lower organisms. The infundibular portion of the gland contains a substance which raises the blood-pressure to a degree far exceeding that produced by adrenalin; it also stimulates the contraction of other non-striped muscles, *e.g.* the uterus and the intestine. Total extirpation of the gland is fatal in dogs. Partial extirpation of the anterior lobes produce adiposity, which may be accompanied by polyuria, transient glycosuria, alopecia, diminution of sexual activity, and even atrophy of the testicles or ovaries. Excessive function of the

anterior lobe of the pituitary, on the other hand, produces acromegaly in an adult patient, or gigantism in a child or adolescent; acromegaly is often accompanied by glycosuria. Laurent recalls the chief local symptoms of pituitary tumour, notably the affections of ocular muscles and of the optic chiasma.

PURVES STEWART.

THE "ADIPOSO-GENITAL" SYNDROME OF THE HYPOPHYSIS.

(160) (**Le syndrome hyphophysaire adiposo-génital.**) LAUNOIS et CLERET, *Gaz. des Hôp.*, June 13 and 18, 1910, pp. 57-83.

UNDER this somewhat cumbrous term the authors describe a syndrome which they have observed in twelve cases of pituitary lesion or tumour. There are three essential features, all of which must be present, viz.:—

(1) Generalised adiposity—which may reach enormous dimensions and affect internal structures as well as subcutaneous tissue.

(2) Genital dystrophy—which consists in lack of development or atrophy of the external genital organs in males and of the ovaries in the female; the heart at the same time is enormous from fat deposition.

(3) Lesion or tumour of the pituitary.

The cases quoted include both males and females, though the latter predominate. Individuals of any age may be affected, and in one case previous double ovariectomy had no effect on the subsequent development of the syndrome. Attention is drawn to the connection which undoubtedly exists between these cases and some forms of Dercum's disease (*adiposis dolorosa*).

C. M. HINDS HOWELL.

ON TUBERCULOSIS OF THE HYPOPHYSIS. (Zur Tuberkulose

der Hypophyse.) HERMANN SOMMER, *Ztschr. f. Laryngol.*, B.2, H. 4, p. 355.

TUBERCULOSIS of the hypophysis is a very rare condition. The author could only find three cases in the literature. To these he adds a fourth. The patient, a woman aet. 48, complained of headache, which had lasted six weeks. On examination a swelling was found on the roof of the nasopharynx of firm consistence. This was much larger a fortnight later. Three weeks after this paralysis of the left sixth nerve developed. Two months later she became somewhat stuporose, and meningitis set in, and she died in a few days. The autopsy showed purulent tuberculous degeneration of the hypophysis, tuberculosis of the sphenoid, and early tuberculous meningitis.

W. G. PORTER.

A CASE OF ANGIO-SARCOMA OF THE PINEAL. (Ein Fall von (162) Angiosarkom der Glandula pinealis.) C. HART, *Berl. klin. Woch.*, Dec. 1909, p. 2298.

THE author gives an account of a case of pineal tumour occurring, as is usual, in a young male. A minute account of its histological appearance is given. It had an alveolar structure, in the fibrous tissue walls ran dilated blood capillaries, and also rows of small, round mononuclear cells. Within the alveolus lay numbers of cells with large oval or rounded nuclei surrounded by ill-defined cell protoplasm. The tumour exhibited little tendency to infiltrate, but had produced well-marked hydrocephalus. From the thirty-two recorded cases which the author has been able to find in the literature, he attempts to form conclusions (1) as to the nature and origin of the tumour cells met with in growths involving the pineal body; (2) as to any function the organ may possess.

With regard to the latter question we are much in the dark, but certain observations have been made which seem to show that the pineal, at any rate in early life, may possess some such function as the hypophysis has been credited with in connection with development, notably of the external genitalia, associated with adiposity. The author thinks the character of the tumours (teratomata) rather than a lesion of the pineal gland is responsible for this.

C. M. HINDS HOWELL.

DEFECT OF AUTOMATIC MOVEMENT WITH CONSERVATION (163) OF VOLITIONAL MOVEMENT. (Défaut du mouvement automatique avec conservation du mouvement volitionnel.) MAX EGGER, *L'Encéphale*, Nov. 10, 1909, p. 396.

A PATIENT with a unilateral (left) bulbar lesion exhibited "weakness" and want of precision in the movements of the left limbs, with hemiataxia, hypotonia, asynergy and adiadokocinesis. There was no indication of a pyramidal lesion. In spite of the fact that the individual force of the muscles of the left lower extremity, tested separately, was very considerable, the patient was quite unable to jump into the air off the left foot: it never left the ground. Similarly, although the individual muscles of the left arm were strong, he was unable to lift his trunk off the bed, when lying on his face, by extending the left arm at the elbow. He could do this quite easily with the right. Another patient, with a unilateral bulbo-pontine lesion, showed that the muscular force of the left (the side affected) limb was quite normal; yet while she was easily

able to move up and down by flexing and extending her right knee, at the slightest flexion of the left knee she always fell to the ground. Similarly, she failed to raise her left heel one centimetre off the ground, in spite of every effort, whereas she could easily rise on the toes of the right foot. Tested with the dynamometer, there was no difference in the muscular force of the individual muscles of the two limbs. Thus in spite of the conservation of volitional movement, the quadriceps extensor cruris and the calf muscles were incapable of fulfilling their rôle in the mechanism of automatic movement. In tabes and in Friedreich's disease the author has observed identical phenomena. In his opinion it is not a question of co-ordination at all, but of insufficiency of afferent impressions conveyed by ascending cerebellar tracts.

S. A. K. WILSON.

A SHORT CONTRIBUTION REGARDING THE INFLUENCE OF
 (164) **POSITION OF THE HEAD ON BRAIN SYMPTOMS.** (Kurze
 Mitteilung zur Lehre vom Einfluss der Kopfhaltung auf Hirn-
 symptome.) H. OPPENHEIM, *Neurolog. Centralbl.*, Feb. 1, 1910,
 S. 114.

HEADACHE and vertigo are, it is well known, often influenced by the position of the head. Oppenheim described in 1898 a case of aphasia in which the speech defect was only present in the erect posture. The effect of posture upon the headache, vertigo, vomiting, pulse, and respiration in cases of tumour in the posterior fossa has been noted by several recent writers. The author has observed that nystagmus may become much more pronounced or may be only demonstrable in certain positions of the head. Thus in two cases of cerebellar tumour, in which, on lateral deviation of the eyes there was well-marked nystagmus, the nystagmus became much more evident, and occurred even when the eyes were in the position of rest when the patient lay on the side. In one case of cerebellar tumour in which nystagmus was not elicited on lateral deviation of the eyes in the erect posture, when the patient assumed the right lateral position and looked to the left it became evident. Distinct paresis of lateral deviation was also apparent under these circumstances. The corneal reflex was quite normal on the side of the tumour in a case of tumour of the posterior fossa, while there was doubtful areflexia in another case of tumour situated in the same region. When, however, the patient lay on the contralateral side, complete areflexia was demonstrable in both cases.

EDWIN BRAMWELL.

CHRONIC AND RECURRENT HEADACHES. NEUROLOGICAL
(165) ADVANCES IN THEIR DIAGNOSIS AND TREATMENT.

TOM A. WILLIAMS, *Charlotte Med. Journ.*, Jan. 1910.

I. THE author excludes from consideration the headache from ocular strain, having nothing new to add. He discusses the relationship between typical migraine and the irregular headaches which occur in *petit brightisme* and conditions of high blood-pressure. He alludes to the recent comparisons between migraine and epilepsy, and regards all three conditions as intoxicative, pointing out the leucocytosis which precedes the convulsive attack and the increased urinary toxicity which follows it. The periodic character of the symptoms conforms to a natural rhythmicity of metabolism, the exaggeration of which may be termed cyclothymia. Some psychoses seem to have their basis in this.

II. Even in organic new growths this periodicity occurs, as every student of cerebral tumours knows, headache sometimes being absent for weeks. Intradural high tension is the cause of the headache, and it can be detected by observing the papilloedema which it causes. Neither this sign nor the symptoms, however, tell us if a growth is present, for cerebral oedema can produce all the symptoms of a new growth. A study of the vascular tension and the urine may, however, determine the diagnosis. Even if this cannot be made, intradural pressure must be reduced at once to save the eyesight. Repeated lumbar punctures will do this; but it is much better, short of topo-diagnosis, to remove a flap of cranium under the temporal muscle.

III. If headaches are purely toxic, psychic perturbations nearly always precede the actual pain, sometimes for days. On detecting these the physician can forestall the headache and save much distress to, and much increase the working capacity of, a patient who has a tendency to them, either constitutionally or from unhygienic environment. In this way every case of chronic headache not organic, even of true migraine, can be cured for all practical purposes, as Mercier states.

IV. From the foregoing types it is essential to be able to distinguish the so-called "neurotic" headache, for the foregoing metabolic disorders are particularly common in "neurotic" people. The psychogenetic headaches, however, are quite different from these. One form is a distress which the patients declare to be less supportable than actual pain. A strict anamnesis discloses that it is a sensation of weight, emptiness, expansion, etc. Indeed, the patient's description is sometimes merely figurative, because he has no experiences with which to compare the morbid sensation. It is a cenesthopathy, and perhaps has to do with autonomic or

protopathic sensibility; it is only an episode among graver symptoms. It sometimes disappears through general psychotherapeusis, but it may be monosymptomatic, and is then incurable as a rule.

V. Like the preceding forms, it has to be differentiated from the induced headache of hysteria and the simulated headache of the malingerer or seeker of sympathy. These latter are very common. Indeed, the "headache" is a current conventional lie. Produced and removed by suggestion, the former conforms to that to which we now limit the term hysteria. It is easily curable, and the tendency to its recurrence can be removed by appropriate training.

VI. This criterion alone should distinguish it from the headache of cerebral tumour, but knowledge of this fact is not current, for Cushing declares that nearly every case of cerebral tumour which he has encountered had been diagnosed as hysteria at one time or another. The grounds for this were sometimes the general nervousness caused by intracranial mischief, and sometimes the inversion of interlacing on the visual colour field for red and blue, which former credulity believed a hysterical stigma. It is in reality a sign of high intradural tension, and appears before the optic discs become oedematous.

VII. Thus no physician should seek to dismiss a headache as imaginary, even after he has determined its psychogenesis; for even the latter require special treatment, and all are warnings of a disease of body or mind, the source of which must be attacked rather than the headache, which is a mere symptom. As the case may be, our therapeusis may be dietetic, surgical, or psychic; and pharmacodynamics are rarely the indication.

AUTHOR'S ABSTRACT.

PATHOGENESIS AND CURE OF WRITER'S CRAMP. (*Patogenesi* (166) *e cura della Mogigrafia.*) ALFREDO BUCCIANTE, *Riv. Speriment. di Freniat.*, Vol. xxxv., p. 1.

THE writer describes a case of writer's cramp which was completely cured by hyperæmic treatment of the right arm by Bier's method. The patient complained of many other functional symptoms, and suggestion is here the most obvious explanation of the cure.

The author then proceeds to discuss the pathogenesis of writer's cramp, and endeavours to make out a case for his local treatment by suggesting that the neurosis is secondary to a neuromuscular peripheral disturbance.

F. GOLLA.

**OBSERVATIONS ON RABIES, WITH SPECIAL REFERENCE TO
(167) AN ATROPHIC FORM OF THE DISEASE OCCURRING IN
ANIMALS.** Major G. LAMB and Captain A. G. M'KENDRICK,
No. 36 Scientific Memoirs by Officers of the Medical and
Sanitary Departments of the Government of India.

THIS memoir puts on record some observations which have a bearing on several of those problems in connection with rabies which still await solution

The observations are almost entirely of an experimental nature, and are not claimed by the authors to be by any means exhaustive of these problems.

The following is a brief summary:—

It is first shown that the virus of the street can be exalted in virulence by passage through the dog by subdural and intraocular injection. It was increased both for the dog and for the rabbit. It is, therefore, evident that in nature it is unnecessary, as was at one time supposed, for the virus to pass occasionally through another species of animal, such as the cat or the rat.

In the original dog and in the dogs of the first few passages Negri bodies were demonstrable in certain cells of the central nervous system, but not in the same cells of the animals of the later passages.

Secondly, an atrophic form of rabies in the rabbit has been observed by the authors to follow both subcutaneous inoculation of fixed rabbit virus and subdural injection of street virus. The chief symptom is progressive emaciation. The disease generally runs a more or less chronic course, but may be comparatively rapid. The fact that this condition is true rabies has been experimentally demonstrated, as on sub-passage from animals dead of this form of the disease typical symptoms of rabies in the rabbit have developed. Further, rabbits showing symptoms of progressive emaciation after injection of rabies virus have been observed to recover completely. Finally, this type of the disease has been observed in a dog infected in nature. It is unfortunate that no experiments on the infectivity of the saliva of these animals during the progress of the emaciation were made.

Thirdly, it was found that guinea-pigs, rabbits and monkeys were all more or less susceptible to the injection of rabies virus under the skin. In this connection the important observation was made that a single passage through the monkey may greatly prolong the incubation period of fixed rabbit virus, that is to say, greatly reduces the virulence of the virus.

Further, the authors sum up the observations which, in their opinion, point to the conclusion that a virus fixed by passage

through the rabbit, such a virus as is used in the process of immunisation, has the same properties and is identical in character with street virus, exalted in virulence by passage through the dog. The importance of this conclusion is evident.

Fourthly, in the hope that it might be possible to curtail the lengthy course of treatment now in use, attempts were made to immunise monkeys by means of a single dose of fixed rabbit virus under the skin. On being tested twenty-three days after the inoculation all the monkeys died of rabies, and it would seem then that no degree of immunity had developed.

Lastly, there are recorded experiments which were carried out with the object of making a quantitative estimation of the bactericidal action, if such existed, of the sera both of patients undergoing anti-rabic treatment and of others who had completed the treatment. Patients were selected at various stages. The earliest had been under treatment for nine days, and the latest had completed treatment twenty days previously. The experiments failed to demonstrate the presence of bactericidal action towards rabies virus in any of the sera. The sera of normal guinea-pigs, rabbits, monkeys, and men were tested in the same way. The results were also negative.

AUTHOR'S ABSTRACT.

THE SKIN REFLEXES IN CEREBRAL APOPLEXY. (*Die Haut-reflexe bei cerebraler Apoplexie.*) HIGIER (Warsaw), *Neurolog. Centralbl.*, Feb. 15, 1910, S. 190.

THE author examined a patient suffering from sciatica and found the reflexes normal. Five minutes later the patient suddenly lost consciousness. (The after-history of the case pointed to a capsular hæmorrhage.) Higier saw the patient again within a quarter of an hour of his previous examination, and found a flaccid hemiplegia with normal tendon jerks. The abdominal and cremasteric reflexes were absent on the paralysed side, while Babinski's sign was pretty well marked on this side. EDWIN BRAMWELL.

CLINICAL CONTRIBUTIONS TO THE QUESTION OF THE
(169) **ANATOMICAL BASIS OF THE ANKLE JERK, AND A CONTRIBUTION TO THE CLINICAL VALUE OF THIS REFLEX.** (*Klinische Beiträge zur Frage, auf welchem anatomischen Wege der Achillessehnenreflex zustande kommt, sowie ein Beitrag zur klinischen Wertung dieses Reflexes.*) V. SARBÓ (Budapesth), *Neurolog. Centralbl.*, Feb. 15, 1910, S. 185.

VON SARBÓ records the case of a man in whom, some time after a fall on the buttocks, absence of the left ankle jerk and hypæsthesia

of the skin over the outer surface of the left leg in the region of the ankle were the only objective signs of disease. He agrees with L. R. Müller, who regards the second sacral segment as supplying this region, and concludes that the reflex arc for the ankle jerk passes through the cord at this level.

[A case examined by the writer, and reported in this *Review* (Vol. i., 1893, p. 392), demonstrates, however, that a lesion of the 5th lumbar and 1st sacral posterior roots is capable of abolishing the ankle jerk, for in this case there was a well-marked degeneration in the root entry zone of the 5th lumbar and 1st sacral segments, while there was no degeneration in the corresponding region at the level of the 2nd sacral segment.]

Several cases of peripheral nerve palsy are referred to in order to demonstrate that the fibres connected with the ankle jerk pass to the cord by way of the internal popliteal nerve.

A case of tabes is cited in which the ankle jerk, which had previously been absent, returned after a hemiplegic attack.

EDWIN BRAMWELL.

THE DISSOCIATION OF TONUS AND THE TENDON REFLEXES.

(170) (*La Dissociazione del Tono Muscolare e dei Riflessi Tendinei.*)

CARLO MANTEGAZZA, *Riv. Speriment. di Freniat.*, Vol. xxxv., p. 153.

THE observations recorded by the author are all made without the use of any apparatus for recording measurements of tonus or strength of response to tendon stimulation. He concludes that the tendon reflex response is independent of the condition of muscular tonus. Usually reflex activity and tonus run parallel, but occasionally they are dissociated. This dissociation is observed in 18 per cent. of normal individuals, and in 28 to 32 per cent. of epileptics, neurasthenics, and psychopaths. The dissociation is most evident in the lower extremities. The most frequently observed form of dissociation consists in increased tendon reflexes with normal tonus. Increased tonus with feeble reflexes is much rarer. Lesions of the internal capsule may cause diminished tonus and increase of the deep reflexes. The same was also found to be true of cerebellar lesions.

F. GOLLA.

FATIGABILITY OF BABINSKI'S SIGN AND THE INFLUENCE

(171) OF THE KNEE JERK. (*Ueber die Ermüdbarkeit des Babinski'schen Zehenphenomens und seine Beeinflussung durch den Patellarsehnenreflex.*) JULIUS BAUER und PAUL BIACH, *Neurolog. Centralbl.*, Feb. 1, 1910, S. 116.

THE literature upon the effect of repeated stimuli in diminishing the activity of the tendon and skin reflexes is summarised. The

author points out that although after a few stimuli the plantar reflex may no longer be elicited from one part of the plantar surface, stimulation of another part may induce it. The readiness with which the skin reflexes become exhausted is, in his opinion, to be probably explained by exhaustion of the sensory end organs.

The following method was adopted in order to ascertain whether the knee jerk had any influence upon the activity of the plantar reflex. The knee jerk and extensor response of the same limb were examined simultaneously by two observers. At the word of command, given at regular intervals, both reflexes were tested. For purposes of control, on every third occasion the examination of the knee jerk was omitted. The normal Babinski's reflex was then obtained. The conclusion arrived at was that, in the majority of cases, the plantar reflex was not altered when the knee jerk was simultaneously examined, although in a small number it was not so active under these circumstances. In one case it appeared to be increased. The knee jerk was uninfluenced.

EDWIN BRAMWELL.

**HORIZONTAL OSCILLATION OF THE EYEBALL IN CERTAIN
(172) RARE TYPES OF PONTINE LESIONS RESULTING IN
SEVENTH NERVE PALSY.** PIERCE CLARK and TYSON,
Med. Rec., Jan. 1, 1910, p. 5.

THE authors describe a condition which they have observed in three cases of Bell's paralysis, involving the orbicularis palpebrarum. There was some deficiency of conjugate lateral movement in all the cases. On attempting forcibly to close the eyelids on the paralysed side, horizontal oscillations of the eyeball appear, varying from forty to sixty per minute. If the effort is persisted in, the opposite eye participates. The movement is greater in the direction in which the conjugate horizontal deviation of the eyes is greater.

The authors consider that these movements indicate a defect in the mechanism for the co-ordinate movements of the eyes, due to a lesion, probably hæmorrhagic, in the tegmental region of the pons at, or just below, the nucleus of the sixth nerve.

H. M. TRAQUAIR.

CONGENITAL FAMILY BLEPHAROPTOSIS. (*Blefaroptosi congenita familiare.*) P. MORGANO, *Riv. Ital. di Neuropatol.*, F. 10, 1909.

THE author reports two cases of blepharoptosis met with in sisters. The ptosis is in the one case complete in the left eye and slight in

the right, whilst it is only partial in the left eye of the sister, the right being normal.

In both cases there is marked retardation of development both somatic and psychical. This deficiency is more evident in the elder sister. Both patients began to walk very late, and their gait is waddling. Both stammer. There is no sign of organic nervous lesion beyond some enfeeblement of the knee jerk. The father is the maternal uncle of the mother. There is no family history of any neuropathy.

These cases are recorded as illustrating the origin of a congenital neuropathy from two healthy parents where consanguinity exists.

F. GOLLA.

PSYCHIATRY.

MENTAL "PUERILISM." (*Le puérilisme mental et les états de* (174) *régression de la personnalité.*) CHARPENTIER and COURBON, *L'Encéphale*, Oct. 10 and Dec. 10, 1909, p. 513.

MENTAL "puerilism" is a syndrome characterised by a regression of mentality to the level of childhood. It occurs in confusional states of toxi-infectious origin, where alternations of personality take place, and is met with in this form in hysteria and in certain organic brain diseases (cerebral tumours *e.g.*). It occurs also in many of the dementias, where it is a stage in the development of intellectual enfeeblement: in other words, it is the result of the process of involution. Constitutional "puerilism" is a stigma of mental mal-development, and is essentially chronic: in this form there is no regression, as there has been no advance. The "puerilism" of senile dementia ought to be distinguished from the "second childishness" of enfeebled old age. The term infantilism ought to be reserved for physical as opposed to mental arrest of development.

S. A. K. WILSON.

TRAUMATIC MENTAL CONFUSION. (*De la confusion mentale* (175) *traumatique.*) PASTUREL and QUENOUILLE, *L'Encéphale*, Dec. 10, 1909, p. 528.

FOUR cases of confusional insanity directly due to traumatism, and indistinguishable from confusional states of toxic and toxi-infectious origin. Amnesia, defects of perception and comprehension, and constriction of the field of conscious activity are the immediate results of the accident; auditory and visual hallucinations, disturbances of sensibility, and other mental changes are to be regarded as epiphenomena.

S. A. K. WILSON.

PERIODIC PSYCHOSIS. (*La psychose périodique : considérations (176) nosologiques sur la manie.*) BALLET, *L'Encéphale*, Dec. 10, 1909, p. 485.

ACCORDING to the well-known views of Kraepelin, all cases of mania really belong to the manic-depressive group: in 1000 cases he found only 1 without relapse. Other psychiatrists dissent from these opinions: Régis, of Bordeaux, found only 29 cases of recurrent or periodic psychosis in 77 cases of mania. In this clinical lecture Professor Ballet has taken 8 maniacal cases at random from his clinique, and finds that all belong to the recurrent psychosis group. Simple mania is, in his opinion, very rare. The immense majority of mania cases, observed for the first time, will be found subsequently to belong to the manic-depressive group. S. A. K. WILSON.

OBSESSIONS AND MANIC-DEPRESSIVE INSANITY. (*Obsessions (177) et psychose maniaque-dépressive.*) DENY and CHARPENTIER, *L'Encéphale*, Dec. 10, 1909, p. 498.

FOUR cases are quoted in detail where periodic attacks of typical psychasthenic obsessions supervened in the course of a manic-depressive psychosis. The authors consider the former as an attenuated form of the attacks characteristic of the latter, a sort of "equivalent" of the psychosis. They refer to various cases in the literature where similar "equivalents" have been observed. S. A. K. WILSON.

SPHYGMOMANOMETRY AND SPHYGMOGRAPHY IN CASES OF (178) **DEMENTIA PRÆCOX.** (*Ricerche di Sfigmomanometria e Sfigmografia nei dementi precoci.*) ALDO GRAZIANI, *Riv. Speriment. di Freniat.*, Vol. xxxv., p. 161.

THE author finds that in the greater number of cases of dementia præcox the systolic pressure is normal. In a few cases it is above normal and only very exceptionally below. The diastolic pressure roughly follows the variations of systolic pressure, but does not run absolutely parallel to it. It was thought that the amplitude of the pulsations showed rather more tendency to variation from day to day than is the case in normal individuals. The frequency of the pulse is often a little greater than in normal individuals and shows a greater tendency to diurnal variations. The rhythm and equality of the pulse is, however, very rarely irregular. In two-

thirds of the cases the sphygmographs revealed nothing abnormal, but in another third sphygmographs were observed differing from the normal either in the accentuation of the elastic rebound or by having a low systolic apex. These variations are obviously referable to a great extent to local conditions. The whole of this lengthy and laborious piece of work tends to show that there is nothing deserving of special attention in the circulatory phenomena of dementia præcox.

F. GOLLA.

TREATMENT.

A CONTRIBUTION TO TREATMENT OF THE MENINGOCOCCUS

(179) CARRIERS. (Ein Beitrag zur Behandlung der Meningokokkenträger.) BETHGE, *D. med. Wchnschr.*, Jan. 1910.

THE writer takes it for granted as an established fact that infection is carried in epidemic cerebro-spinal meningitis by the healthy "contacts" with affected persons. During an epidemic of this disease affecting 9 children out of a community of 187 in an orphanage, he had ample opportunity to test the efficacy of different methods for disinfection of the naso-pharynx. Out of the 187 inmates, 60 were found to have the meningococcus, including 5 nurses, 2 servants, and 53 orphans. These were isolated, and the disinfectants used were pyocyanase, peroxide of hydrogen, serum, protargol, and normal saline solution. The patient was declared free from infection when the nasal mucosa failed to give any culture of meningococcus on three separate examinations.

The most effective disinfectant was found to be washing out the nose with normal saline solution followed by application of hydrogen peroxide, which, on an average, destroyed the meningococcus in 12½ days.

JOHN D. COMRIE.

SOME POINTS IN THE TREATMENT OF NERVE INJURIES.

(180) JAMES SHERREN, *Brit. Med. Journ.*, Jan. 15, 1910, p. 130.

THE writer emphasises the care necessary to obtain *perfect* recovery. After mentioning that this is possible after primary suture and incomplete injuries, and rarely obtained after secondary suture, mention is made of important points in the treatment.

Three points are to be remembered in connection with nerve suture:

1. The suture should be of absorbable material.
2. The wound in the nerve should be protected by Cargile membrane.
3. The deep fascia should be sutured separately.

Examples are given showing the ill results which may follow if these are neglected.

The importance of after-treatment is insisted upon, particularly the relaxation of the paralysed muscles and their treatment by massage until voluntary power returns.

In the latter part of the paper the treatment of the involvement of nerve branches in scar tissue is discussed and the importance of its early diagnosis mentioned. Special reference is made to the form of involvement following amputation of the finger.

AUTHOR'S ABSTRACT.

**ON MUSCLE TRANSPLANTATION IN THE TREATMENT OF
(181) TRAPEZIUS AND SERRATUS MAGNUS PARALYSIS.**

(Ueber Heilung von Schultermuskellähmungen durch kombinierte Muskelplastik.) KATZENSTEIN, *Berl. klin. Wchnschr.*, No. 49, 1909, p. 2184.

KATZENSTEIN reports two cases of muscle transplantation for the relief of paralysis of shoulder muscles.

The first case was that of a man who suffered from complete paralysis of the trapezius following division of the spinal accessory nerve. He was so disabled as to be unable to follow his employment. Katzenstein detached a portion of the latissimus dorsi of the same side, at its humeral attachment, and fixed it to the dorsum of the scapula to replace the lower trapezius. He next cut two flaps from the middle and upper divisions of the sound trapezius, turned them over and fixed them to the scapula to replace the corresponding portions of the paralysed muscle. The flaps functionated well, and the stability of the shoulder was so much improved that the patient was able to resume his work.

The second case was that of a female patient in whom K. so far remedied a complete serratus paralysis by separating the pectoralis major at its insertion, and fixing it to the scapula to replace the upper serratus. In addition, he detached and twisted outwards the origins of the lower trapezius and rhomboid, so as to alter their line of action and make them replace, so far, the lower portion of the serratus.

The plan adopted in each case is clearly explained, and the general principles to be followed in such cases are indicated. The report is interesting as suggesting possibilities of treatment for cases where the functional disability is really serious.

J. W. STRUTHERS.

Reviews

JAHRBUCH FÜR PSYCHO-ANALYTISCHE UND PSYCHO-PATHOLOGISCHE FORSCHUNGEN. Herausgegeben von Professoren BLEULER und FREUD, Redigiert von Dr JUNG. Bd. I., 1^e Hälfte. (Deuticke, Wien.)

THE striking increase in the output of literature on the subject of Freud's psycho-analytic researches, and the inordinate space demanded for the adequate treatment of the questions raised and description of the cases thus investigated, has made it indispensable to found a special journal devoted to it. It will appear twice a year, and if the promise inspired by the first volume is maintained, the appearance of each number will be eventful in the history of the development of this science. Owing to the amount and originality of the contents (there are 318 pages in the first number), it is impossible here to do more than indicate the nature of them. The style of the articles naturally presupposes a knowledge of the previous work of Freud and his school, and is therefore not suited to those who are beginning the study of the subject. To those familiar with that work it need only be said that the Jahrbuch contains a fund of material of the greatest interest and value.

1. FREUD. *Analysis of the phobia of a five-year-old boy.*—In this detailed study Freud gives from direct observation an excellent confirmation of the conclusions concerning infantile sexual life previously maintained from psycho-analytic study of the adult, and expounded in his "Drei Abhandlungen zur Sexualtheorie," and in a later article on the subject (reviewed by Brill in the *Journ. of Nerv. and Ment. Dis.*, Aug. 1909, p. 503). We have here the first glimpse into that side of childhood psychology which is of such fundamental importance for the development of future traits.
2. ABRAHAM. *The position of consanguineous marriages in the psychology of the neuroses.*—Abraham here very ingeniously shows how certain phenomena previously ascribed to heredity are to be explained by factors of early development.
3. MAEDER. *Sexuality and epilepsy.*—This is a detailed study of the sexual life and characteristics of epileptics, which will be continued in a later number of the Jahrbuch. Maeder attempts to define the sexual traits familiar to this disease, as Freud has done for the psycho-neuroses, and Jung for dementia præcox.

4. JUNG. *The significance of the father for the fate of the individual.*—In this very suggestive and original work, Jung, illustrating his theses with apt examples, traces the various ways in which the character of the father stamps itself, by interaction and reaction, on the children, and gives many penetrating side-lights into the intimate relations of family life.
5. LUDWIG BINSWANGER. *Attempt at an analysis of a case of hysteria.*—This fine analysis, only the first half of which is here printed, is extrinsically interesting in that it was carried out at the Jena Clinic by request of Professor Binswanger, the accepted German authority on hysteria.
ERNEST JONES (Toronto).

THE DIAGNOSIS AND TREATMENT OF HEADACHE. FR. WINDSCHEID (Leipzig). Halle: Carl Marhold. 2nd Ed., pp. 68. Price M. 2.

FEW complaints can arise from so many causes as headache, and it often requires very painstaking and thorough investigation to find what is at fault in any particular case. This little work takes up very systematically first the diagnosis, then the treatment of headaches arising from diseases of the nervous system, the organs of special sense, the alimentary system, the kidneys, constitutional diseases, poisons, infective diseases, and lastly, rheumatism of the scalp. The whole work has been rewritten since the first edition, and can be recommended as a clear exposition of the subject.

J. H. HARVEY PIRIE.

Obituary

WILLIAM PAGE MAY, M.D., B.Sc., FR.C.P., etc.

THE death of William Page May, which occurred so suddenly and so unexpectedly on the 18th January, deprives scientific neurology of a worker of exceptional ability and energy—one who had already done much excellent research and gave promise of still more brilliant work in the future. May was equipped in quite an exceptional way for the work he had chosen. His wonderful academical career, unique in its distinction, need not be mentioned. Those who knew him best always regarded him as a clinician of the very first rank, one whose opinion was determined by wide

knowledge and sound judgment, and he possessed that rare clinical instinct which, so to speak, brought everything to a focus and conveyed to his mind a clear picture. But he also had the ability, one might almost call it the gift, of making the picture as clear to others as it was to himself. His wide clinical experience was of the utmost use to him in his work of more recent years, because it suggested to him lines of inquiry from the experimental side. His lectures at University College on the physiology of the nervous system were models of what such lectures should be, and no one who listened to them could fail to recognise, in spite of their apparent simplicity, the immense amount of work and knowledge which served as their groundwork. His published work—in the *Physiological Transactions*, in *Brain*, in the *Ergebnisse der Physiologie*, and in this *Review*, were concerned chiefly with sensory conduction in the cord, and he had also done much valuable work on the functions of the cerebellum and optic thalamus, a great deal of it unfortunately not yet complete.

Of May's personality much could be written. In spite of his ability and distinction, perhaps because of them, he was modesty itself, and all who knew him will hold him in the most affectionate remembrance. His loss is mourned by many friends in many lands.

JAMES TAYLOR.

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- Lemaitre. "La Vie Mentale de l'Adolescent et ses Anomalies." Saint-Blaise : Foyer Solidariste, 1910, 3 fr.
- Greeff. "Atlas of External Diseases of the Eye." Translated by P. W. Shedd. London : H. K. Lewis, 1910, 42s.
- Austregesilo. "Ataques epileptoides produzidos pelo uso do brometo de canfora." Rio de Janeiro : Besnard Frères, 1909.
- Cameron and Milligan. "The Development of the Auditory Nerve in Vertebrates" (*Jour. Anat. and Physiol.*, Vol. xlv.).
- "Klinik für psychische und nervöse Krankheiten," Bd. 4, H. 4. Halle : Marhold, 1909.
- Erdheim. "Über das eosinophile und basophile Hypophysenadenom." Wiesbaden : Bergmann, 1910.
- Haberfeld. "Zur Pathologie des Canalis craniopharyngeus." Wiesbaden : Bergmann, 1910.
- Schilder. "Über das maligne Gliom des sympathischen Nervensystems." Wiesbaden : Bergmann, 1909.
- Ernest Jones. "The Oedipus-Complex as an Explanation of Hamlet's Mystery : A Study in Motive" (*Amer. Journ. Psychol.*, Jan. 1910).
- Oppenheim. "Zum 'Nil nocere' in der Neurologie" (*Berl. klin. Wchnschr.*, No. 5, 1910).
- Oppenheim und Borchardt. "Zur Meningitis chronica serosa circumscripta (cystica) des Gehirns" (*D. med. Wchnschr.*, No. 2, 1910).

Review of Neurology and Psychiatry

Original Article

IS A BRACHIAL MONOPLÉGIA ALWAYS MOST MARKED IN THE HAND?

By G. BERGMARK, M.D., Docent, Upsala.

From the Medical Clinic of the University.

ONE of the most important points as regards the differential diagnosis between a cortical and a capsular lesion is no doubt the distribution of the paralysis. In the former case monoplegias are more apt to occur on account of the extensive area of projection, either as a simple monoplegia, one extremity only being affected, or as an associated monoplegia, of which there are two types: a brachio-crural and a brachio-facial type. In the latter case a hemiplegia is always the result (Marie and Guillain).

Further, it is considered characteristic of a cortical, in contradistinction to a capsular lesion, that the coarse power of the hand is less affected than the isolated movements of the fingers and the power of the hand to carry out associated movements (Marinesco, Noïca, Wernicke).

It is generally considered (Monakow, Oppenheim and others) typical of a paralysis of cerebral origin, which may be due to a cortical or a capsular lesion, that the functional disturbance preponderates in the distal portion of the paralysed extremity, although it may involve the most proximally situated muscles, as in cases reported by Clavey. Thus when the paralysis affects

the arm the power of movement at the shoulder- and elbow-joints may be retained, while the hand and, more especially, the fingers are gravely paralysed. This condition, to which attention has specially been called by Bonhöffer, is, according to this authority, constantly found in the case of the arm when the middle third of the central convolutions is involved. Bonhöffer lays stress upon the fact that a cortical lesion never can affect the motility of the shoulder- and elbow-joints and at the same time spare that of the hand.

Clinically it would thus appear that there are no real grounds for speaking of a cortical projection of the special arm-segments in the sense applied by Munk.

No doubt this is rather difficult to explain. Experimental physiology shows that the arm-centre is subdivided into subcentra for the movements of the shoulder-, elbow-, wrist- and finger-joints, a fact which has been confirmed as regards the human body at operations (Krause, Mills and Frazier and others). This being so, one would expect that with a limited lesion of the centre for the shoulder-joint, for instance, the motility of the shoulder would be most affected and that of the hand would be at least relatively unimpaired. Such a case has, as a matter of fact, been described by Allen Starr ("Organic Nervous Diseases," 1903, fig. 166, cit. O. Fischer), where a cyst is depicted in the central convolutions giving rise, it is true, to paresis of the whole arm, but affecting principally the shoulder. Although special reference to this point is seldom met with, still some authors in recording cases incidentally remark that a paralysis of the upper extremity was more marked proximally than distally. Again, Oppenheim (Case 4) has related a case of a tumour in the centre for the leg gradually extending also to the centre for the arm. In this case the paralysis of the arm was most pronounced proximally. In still another case (Case 5) of new growth in the upper half of the central convolutions, the paralysis—at first post-paroxysmal but later permanent—was most definite in the muscles of the hip and shoulder. Löwy, in a case of cerebral arterio-sclerosis, was able to ascertain the presence of paresis in the shoulder, the power of the hand being good; there was, it is true, micrographia, but the finer hand movements were preserved. Into the same category can be placed a case related by Söderbergh in which there were Jacksonian fits beginning in

the knee and weakness of the arm and leg. The weakness was more marked in the shoulder than in the arm, and the finer movements of the hand badly executed. The cause was found to be a tumour of the frontal lobe involving posteriorly the upper part of the anterior central convolution. After operation the paresis of the shoulder rapidly diminished and the patient also recovered the capacity of finer movements. In this case the inability to carry out finer movements was probably due to remote action of the growth, since the patient also showed sensory disturbances although the lesion did not reach the sensory area. Haendly describes a case of paresis of the pectoralis, serratus, deltoid and triceps muscles, the functions of the extensors and flexors of the hand as well as of the small muscles being almost normal.¹ These cases consequently show that a cerebral paralysis may be more definite proximally than distally.

When, on the one hand, the relatively small space occupied by the arm-centre, and, on the other, the great individual variations, are taken into account, it may be affirmed that the exact determination of the various subcentra possible of Sherrington and Grünbaum is alone possible by means of stimulation. So far as I have been able to find, this has not been done in cases belonging to this group, and evidence sufficient to prove the theory of Bonhöffer has still to be brought forward. In order to prove this theory it would be necessary that the paralysis should have a distal distribution, and that the centre for the hand should be proved by electrical stimulation during affection to be intact, the lesion causing the paralysis being situated elsewhere in the arm-centre. Moreover, I have met with a case which directly contradicts the teaching of Bonhöffer. This case, which is of great importance in relation to this question, I shall now refer to in more detail.

The case will be found fully recorded in Henschen's "Path-

¹ Haendly diagnosed hæmorrhage into the retro-lenticular portion of the capsule because of the hemianopsia and hemianæsthesia present. The onset of the lesion, however, points to a softening, not a hæmorrhage. Against the topical diagnosis there is the fact that no sensory channels run into the retro-lenticular part of the internal capsule (Müller); besides this, a type of paralysis like that described by Haendly is unknown in connection with capsular lesions. On the other hand I see nothing in Haendly's case that contradicts a larger parietal softening extending downwards to the visual tract and only slightly affecting the central gyri.

ologie des Gehirns" (Vol. iii., Case 20). The right lower extremity was markedly parietic. There was paresis of the sterno-mastoid. At the shoulder the arm could be raised upwards only 45° . The range of movements taking place at the right elbow joint was normal. Both hands were parietic, but especially the right one. At the operation a tumour was found occupying the posterior central convolution on a level with the centre for the leg. By means of electrical excitation the position of the centres for the muscles of the shoulder and neck were established, it being also ascertained that these were situated very close to the tumour. The tumour was excised. After the operation the right shoulder was dropped and could not be raised. But the forearm could be moved, and pronation and supination, as well as movements of the hand and fingers, could be accurately performed. The leg was highly parietic. Eighteen days after the operation rotation of the shoulder-joint could scarcely be performed, otherwise movements of this joint took place to a range of 45° . At the elbow-joint flexion could be performed to about a right angle, extension was almost normal, movements of the fingers normal. Three months after the operation the mobility of the shoulder-joint was 45° , of the elbow and wrist-joints almost complete. All the movements of the fingers could be performed, though weakly and without precision.

Later on total hemiplegia developed. At the autopsy the tumour, which occupied the upper third of the central convolutions and a part of the gyrus parietalis superior, was found to reach laterally only slightly beyond the level of sulcus frontalis superior.

The fact that before the operation a paresis of the hand was present must be put down to remote action, together with the fact that the other hand showed reduction of the coarse power. This is consequently of less importance. But the course after the operation shows obviously that a process situated immediately above the centre for the shoulder-joint may affect the mobility of the shoulder-joint more than that of the elbow-joint, and the mobility of the latter joint more than that of the hand. Consequently also this case disproves Bonhöffer's doctrine, and shows in the same way as the cases previously related that a cortical process may cause a marked paresis of more proximal parts of the upper extremity.

I myself have quite recently had an opportunity of following more closely an analogous case.

CASE 1.—K. G. H., 70 years old, compositor. He has previously been in good health, except that four years ago he suffered from thrombosis and erysipelas in the right leg, for which he was treated at the Surgical Clinic of Upsala, and from which he recovered completely. About one year ago he had an attack of giddiness, fell down a flight of stairs, and hurt his right shoulder. He was well and on duty again the next day, and has never observed any ill consequences of that trauma. Afterwards he felt neither giddiness nor headache, and has been able to do his work the whole time until November 25. It is specially remarkable that he has never felt any weakness or fatigue in the arm while at work. On November 23 nausea and vomiting began. During the night of November 25, when he got up at 2.30 a.m. to pass water, he noticed that his right arm was weak, and he had some difficulty in speaking. There was no affection of consciousness, as far as those around him could see. At about two o'clock he had been able to speak, and nothing abnormal had then been observed. At about four o'clock the patient was again able to speak.

On admission on November 25 the following notes were taken by Dr Ehrenberg:—There was considerable diminution in all the movements of the right arm; indefinite weakness of the right lower part of the right half of the face. The motility of the legs could not be tested. Patellar reflexes active, but equal in both sides. Tendon and periosteal reflexes active and equal in both arms. Positive Babinski sign.

The urine contained albumin and numerous hyaline casts. The pulse was 80, regular and strong. The aortic second sound was much accentuated.

November 27.—Alb. 0.4 per cent., numerous hyaline casts, sp. gr. 1.018.

November 30.—Alb. 0.6 per cent., hyaline and granular casts, sp. gr. 1.015. Blood-pressure (Riva-Rocci—Landergrén), 170 to 180.

December 2.—The face and tongue show no abnormality, and the facial paresis noticeable on November 25 is now gone. No distinct paresis of the leg.

In the upper extremity the paralysis, though considerable distally, is most definite in the proximal parts of the limb. Complete right-sided paralysis on raising the shoulder-region as a whole. Examination of the shoulder-joint is somewhat hampered by the pain which is evoked on passive movement. Even if the arm is raised to such slight degree as not to give rise to any pain, it falls down again, in spite of the patient's obvious efforts to retain it in this position.

At the elbow-joint the power of extension is almost lost, but flexion is better retained. Extension of the wrist and fingers is performed with very small power, but the patient, when the hand lies flexed on a horizontal supporting surface, can almost completely perform the movement of extension. The power of volar flexion is much better retained. The strength cannot, however, be measured by means

of the dynamometer. He is unable to perform isolated finger-movements.

There is intense rigidity in all the joints and in all the directions of movement of the right upper extremity.

December 4.—The movements at the shoulder-joint are still completely paralysed.

At the elbow-joint the power has greatly increased both in flexion and extension. At the wrist-joint the range of movement is the same as on December 2. The strength of the fingers has considerably increased, and he is able to perform isolated movements with the thumb, though not with the other fingers.

The rigidity of the wrist seems to have somewhat diminished. In the finger-joints a slow, involuntary movement of flexion takes place with considerably greater power than that of the corresponding voluntary movement.

The power of the leg is unchanged; he is unable to raise himself.

December 7.—Elevation of the shoulder can be performed, but with far less strength than on the left side. At the shoulder-joint a slight degree of internal rotation and of adduction are possible, but abduction, external rotation and raising of the arm backwards and forwards are impossible. At the elbow-joint the movements of extension and flexion can be fully performed, but with little force.

The coarse power of the hand and fingers is good, both with regard to extension and flexion. Dynamometer, left 18, right 12. Isolated movements can be performed by the thumb, index, and middle fingers, but not with certainty in the two ulnar fingers.

The rigidity in the joints of the fingers and wrists is now decidedly diminished, but is still most definite in the flexors. Rigidity of the flexors at the elbow, although diminished, is still distinct in the flexors, though hardly noticeable in the extensors. At the shoulder-joint the rigidity is much more pronounced, asserting itself chiefly in the internal rotators and in the adductors.

December 10.—Nothing in the shoulder-joint itself can be found to explain the pain attending movements of greater amplitude. Radiography reveals no abnormality. The movements are now not painful until they reach about 60°, when those of abduction, outward rotation, and forward elevation cause pain. In these movements, especially in the last-mentioned, considerable resistance is felt, which the patient cannot suppress. In rotation inwards and adduction there is no rigidity. At the elbow-joint the rigidity of the flexors shows itself when the joint is extended beyond 135°, but the extensors are not rigid. In the joints of the hand and fingers the rigidity is about the same as on the 7th of December.

Elevation of the shoulder is almost equally powerful on the two sides. Internal rotation and adduction of the shoulder-joint are markedly increased. When the arm is lying on a horizontal supporting surface, but not when it is hanging down, the patient can perform small movements of abduction, and is able to raise his arm forwards and upwards from the supporting surface, though only to a very slight degree.

Active movements of the elbow-joint as before.

Dynamometer, right 18, left 20 to 21. Can perform isolated movements with all the fingers. Movements of adduction and abduction without remark in all the joints.

December 12.—At the shoulder-joint there is merely slight rigidity, which becomes evident in abduction and in forward movement. Pain is only associated with movements approaching 90° . The rigidity of the elbow-joint is almost gone and that of the hand and finger-joints much diminished.

Elevation of the shoulder can be performed almost equally well on both sides. At the shoulder-joint, if the arm rests on a horizontal support, the patient can perform abduction, lifting the arm forwards and backwards to about 30° , and in the sitting posture to about $10-15^{\circ}$. Can raise the arm to about the same height, outwards or forwards, from a horizontal support, and retain it in this position for a short time. But if the arm is raised passively 30° or more it at once falls down, although the movement does not inconvenience the patient.

The motility of the elbow, wrist, and finger-joints is the same as at the preceding examination.

The coarse power of the leg not obviously reduced.

Examination of the sensibility yielded very unsatisfactory results on account of the want of attention on the part of the patient. The muscular sense and the sense of touch seemed to be reduced in the right arm. The stereognostic sense was, however, good.

The reflexes in the arms are active and equal on both sides, as are the patellar reflexes. The scapulo-periosteal reflex is distinct on the left side, absent on the right. No Babinski sign. The abdominal reflex is absent on the right side and uncertain on the left.

December 14.—Pain is felt only when the arm is raised forwards at the shoulder-joint, but it comes on when the movement reaches 30° . The power of adduction, internal rotation, and extension are now fair; that of abduction and external rotation is very feeble, notably so with regard to flexion. Patient is unable to keep the arm raised either outwards or forwards, but in the sitting posture he can keep it raised backwards at about 20° .

Flexion of the elbow-joint is about as strong as on the other side, but extension is much weaker. Pronation and supination are alike on both sides. Dynamometer on both sides 20. Rigidity of the hand and the reflexes remain as on the 12th.

No disorder of the muscular sense in the elbow-joint or in the wrist. No disorder in the joints of the fingers, but the examination of these is unreliable, as the patient cannot quite suppress his own movements of resistance.

The reflexes of the forearm are somewhat more active on the right side. Otherwise the reflexes remain as on December 12.

December 17 to 18.—A slight rigidity of the shoulder-joint is evident when the arm is raised forwards and rotated outwards. There is pain on raising the arm forwards to about 30° and in abduction to about 90° , as well as in outward rotation beyond the median position.

In the sitting posture the patient can move the arm outwards about 20°, backwards about the same, but only slightly forwards, and he is able to rotate the arm outwards to the median position. He can fling the arm outwards 45° and forwards about half that extent, but cannot retain it in those positions. Adduction, internal rotation inwards, and backward lifting are now performed with considerable power, though considerably less well than on the other side. There is no obvious difference between the two sides with regard to elevation of the shoulder.

The power of flexion of the elbow-joint is fair, though decidedly inferior to that of the other side. The power of extension is much more reduced. Dorsal flexion of the hand seems less powerful than on the other side, but supination, pronation, and flexion are performed with equal strength on both sides. The power of ulnar and radial flexion is good, but the patient has some difficulty in actively performing these movements; he is apt to combine them with flexion and supination respectively.

The isolated as well as the combined movements (flexion, extension, abduction, and adduction) are equally strong on both sides. Dynamometer on both sides 18. But the patient gets tired sooner on the right side, so that at the tenth squeeze the dynamometer showed 5 to 6 on the right side, 16 to 18 on the left.

Rigidity of the joints of the wrist and fingers has disappeared; there is still a slight trace of it at the extreme extension of the elbow-joint. Reflexes as on December 14.

December 27.—Cranial nerves show no abnormality. The facial nerve is intact, both as regards voluntary and mimic movements.

The movements of the scapula itself show no difference on the two sides, as regards elevation, depressive adduction and abduction. The paresis is still marked in all movements of the shoulder-joint, especially in abduction, forward elevation and external rotation. From the horizontal position the patient can lift the arm somewhat more than 45° in those directions. (But on trying to fix the scapula with the hand—which, however, did not quite succeed—the excursion was only 30° to 40°.) Complete inward rotation can be reversed into external rotation till somewhat more than middle position. None of these movements, however, can be performed against even a minimal resistance. The power of backward elevation, internal rotation, and especially adduction of the arm, are comparatively much improved, though still markedly inferior on that side as compared with the other. Since the last examination the power of internal rotation shows relatively the most improvement.

The rigidity which at first was strongly marked has now all but passed off (signs of it being still present only on raising the arm forwards). The pain elicited by greater passive movements is likewise less pronounced, the patient now allowing his arm to be lifted forwards and outwards to about 90° and rotated outwards to about 30° beyond the middle position.

At the elbow-joint the power is somewhat reduced, both as regards extension and flexion. At the wrist, movements of pronation,

supination, dorsal flexion, and volar flexion are performed with equal strength and range of movement on both sides; radial and ulnar flexion as before. With regard to the combined as well as isolated movements of the fingers, the power is equal to that on the left side, but the patient gets distinctly more quickly tired in the right hand. The power of more complicated movements is good. There is a minimum of rigidity in the joints of the fingers, wrist, and elbow.

The sense of touch is somewhat uncertain in both hands. The sense of pain is not affected. Examination of the muscular sense, the meaning of which the patient cannot realise, shows uncertainty on both sides, varying greatly, however, as regards degree. Examination of the stereognostic and symbolic sense—"which had some meaning in it"—showed good appreciation of such objects as the patient was accustomed to handle (*i.e.* identified, for instance, a 2-öre piece, 10-öre piece, 5-öre piece, a purse, knife, key, a pair of spectacles, a pencil, but not a stethoscope, an incandescent lamp and an aural speculum).

Reflexes.—Biceps and triceps reflexes are still more marked on the right side, though not nearly so active as before. The radio-periosteal reflex is very lively on the right side, moderately so on the left. The scapulo-periosteal reflex is absent on the right, distinct on the left side. The patellar reflex somewhat more active on the right side. The Achilles jerk is equal on both sides. No Babinski sign. Abdominal and cremasteric reflexes absent on both sides. No rigidity.

January 15.—Shoulder-joint: active abduction to about 70° , forward elevation to 60° , external rotation to middle position; backward elevation, adduction, internal rotation, and raising and lowering of the scapula can be performed to the normal range. The movements of the scapula itself show normal strength. But at the shoulder-joint the strength is diminished as regards all the movements, and the paresis increases relatively in the following order: adduction, internal rotation, abduction, forward elevation, external rotation. There is no atrophy. Electrical excitability is normal. There is no contracture or rigidity; pain only accompanies extreme movements of the shoulder-joint.

Elbow-joint.—Flexion to full excursion, extension to 160° to 170° . The power is somewhat diminished as compared with the other side, especially with regard to extension. No contracture.

Wrist.—Pronation and supination and dorsal flexion showed no abnormality; volar, radial, and ulnar flexion takes place not to quite the same extent, but with the same power as on the other side, and the latter movements can now be performed without being combined with other movements.

The movements of the fingers are now quite as strong on the right as on the left side. No contracture.

The sense of touch and of pain are the same on the two sides. The examination of the muscular sense still gives indefinite results on both sides. The stereognostic perception remains normal.

Tests for Ataxy: the Finger.—Finger test is not quite correctly

performed, the left hand usually passing 1-2 cm. too far in a cephalic direction. On the other hand, the finger-nose test is exactly performed with both hands.

A test for apraxia, carried out the same day according to Wilson's scheme, gave a totally negative result, and on this account I do not think it necessary to report it.

Reflexes as on December 27.

January 31.—Dynamometer, right 28, left 25. After ten squeezes, 10 and 22 respectively. There is no paresis as regards active or resisting movements of the joints of the fingers or the wrist, but there is difficulty in carrying out purely radial or ulnar flexion. Associated and complicated finger-movements are performed slowly, but otherwise correctly. Motility of the elbow- and shoulder-joints is as before (January 15).

Sensibility and reflexes as before.

February 6.—The point of the right foot touches the floor at every step; there is, however, no paresis in dorsi-flexion of the foot. (The gait has not been examined before on account of the general condition.) Babinski sign is positive on the right side.

March 23 (examined at home).—There is still obvious weakness of the shoulder-joint, the movements of external rotation, abduction, and forward elevation being, as before, most affected.

There is slight weakness of extension at the elbow-joint. No paresis of the joints of the fingers or wrist, but the movements are markedly slower on the right side. No sensory disorders can be detected.

The radio-periosteal reflex is increased on the right side, the biceps and triceps are alike on both sides, the scapulo-periosteal reflex is absent on the right side. The knee-jerk is much increased and the Achilles-jerk is equal on both sides. Babinski sign negative. There is distinct hypertonus of the tensors of the thigh, but no appreciable hypertonus in the muscles of the calf. The sole of the foot, or more often the heel, is sometimes dragged in walking. No hypertonus of the arm.

May 6 (examined at home).—Flexion and abduction at the shoulder-joint continues much weaker than on the left side. The power of external rotation has markedly improved; but the power of this movement, as well as that of internal rotation and adduction, remain distinctly weaker than on the other side. At the elbow-joint the power of flexion is equal to that of the left side; extension is somewhat weaker on the right side. At the wrist the strength is the same on both sides. Pressure of the right hand is obviously stronger than that of the left. The isolated finger-movements in the right hand are fairly strong, but the movements of the wrist, as well as those of the joints of the fingers, are not a little slower than on the left side. Still they are not fumbling, and they remind one most of the manner in which a patient suffering from spastic spinal paralysis uses his hand. He can, however—even with his eyes shut—button and unbutton his coat with the right hand only; he can also put on his socks and boots, take a pinch of snuff, take a match out of a closed match-box, and—if he supports the box with the left hand—strike the match. The difficulty

in performing these movements, though marked, is yet not very much greater than that ascertained on testing the other hand with regard to its power of performing these movements alone.

No paresis of the movements of the scapula, facial nerve, or leg can be detected.

The scapulo-periosteal reflex is weak on the right side, considerably stronger on the left. Triceps and biceps reflexes are somewhat weaker on the right than on the left side. The radio-periosteal reflex is very strong in the right arm. There is a certain degree of rigidity in the right hand and finger-joints; the rigidity is obviously more marked in the flexors than in the extensors, but this did not appear distinctly until the patient had been sitting undressed for a while in the rather cold room. Apart from this, there is no rigidity of the muscles of the arm. The patellar reflex is very strong on the right side, rather active on the left. The Achilles reflex is equal on both sides. No Babinski sign. There is distinct hypertonus of the tensors of the thigh; no hypertonus of the muscles of the calf. Gait as before (March 23).

The stereognostic power shows no abnormality; there are no signs of ataxy in either extremity.

The paralysis in this case was thus mainly of the proximal type. The history may be briefly summed up as follows:—

There was, to begin with, paresis of the muscles of the trunk, paralysis in the movement of raising the right shoulder; paralysis of the shoulder-joint, intense paresis in flexion of the elbow-joint, and paralysis in extension; very marked paresis in extension of the wrist and the fingers, less intense paresis in flexion of those joints. No paresis of the leg; temporary and uncertain paresis of the facial nerve on the right side. Later on the strength quickly improved in the trunk and as regards elevation of the shoulder. The coarse power of the hand quickly recovered, and became eventually greater on that than on the other side. The power of isolated finger-movements was next recovered, at different times in the different fingers. The patient also recovered the power of complicated and associated movements of the hand, though that function later on became somewhat masked by a second rigidity. At the elbow-joint the paresis improved, to a certain degree as regards extension, and completely as regards flexion. The paresis remained most marked in the shoulder-joint, and here the movements of adduction and flexion remained most affected. At the close of our observation of the case, external and internal rotation, adduction, and extension were less affected. I shall not here discuss the spastic symptoms, as I have done so elsewhere

(Case 23), but shall content myself with pointing out that as regards the leg, in which no paresis had been found, but where the spasm afterwards developed, the proximal and not the distal parts were the seat of this disorder also.

That we have here to deal with a cerebral lesion goes without further saying; the limited symptoms show that it cannot have occupied the capsule (Marie, Guillain, Roussy, and others quoted by Bergmark).¹ Its localisation in the cortex is thus obviously the most probable. Further, the presence of peripheral arterio-sclerosis, the mode of onset, and the very probable cortical localisation, point to the likelihood of the case being one of thrombosis with softening.

One must, however, here consider whether peripheral causes might not have had some influence in causing the paralysis to be most marked at the proximal instead of, as is the rule, the distal parts. There is no evidence whatever of a peripheral nervous lesion of or below the brachial plexus. On the other hand, the pain caused by passive movements might lead one to suspect an arthritis. The patient had suffered from a slight trauma of the right shoulder one year before, but had suffered no inconvenience from it. As, further, the usefulness of his arm in the execution of his work as a compositor was in no way affected, and as neither palpation nor radiography revealed any changes in the joint, arthritis deformans may be excluded.

Still, it often happens that arthritis, in the form of a synovitis (*e.g.* a case by Darkschewitsch, which was examined post-mortem), develops after hemiplegia, and is, as a rule, most pronounced (Steinert) in the shoulder-joint. These arthritic processes do not, however, as a rule develop acutely, but, judging from Darkschewitsch's statistics, not until one to six months after the attack. There was, in Darkschewitsch's cases, in addition to pain on movement, tenderness over the joint and palpable changes in several of the joints. With regard to the present case, I found pain on movement on my first examination of the patient (December 2), but no tenderness could be detected over the joint, nor, as has been mentioned, were there any palpable changes. Further, the pain differed greatly in movements of different directions, and, as a general rule, it was most marked in connection with those movements which stretched the

¹ In my paper upon "Cerebral Monoplegia" appearing in "Brain."

muscles that showed the higher degree of contracture. This tallied with Darkschewitsch's case 8, in which, before any signs of arthritis were present, pain was brought on when the contracted pectoral muscle was stretched; and as in my case the pain disappeared in proportion as the "early contracture" diminished, I think myself justified in inferring that the pain was due to this cause, there being consequently no reason to regard it as a symptom of an arthritis. This disposes, therefore, of the only possible justification of the opinion that an arthritis might have played the part of a direct or indirect cause of the restriction of the movements of the shoulder-joint.

The fact that the paresis remained for a long time after the contracture and pain attending passive movements had disappeared from the shoulder-joint is a proof that the pain cannot have simulated paresis in this case. There was, in fact, intense paresis at the elbow-joint also, though no pain was felt there; nor was contracture at any time so marked there.

Hence there is no reason to suppose that an arthritis may be the cause of the restriction of the movements of the shoulder joint. The pain has, it is true, obviously been due to the contracture, but, on the other hand, it is equally obvious that it cannot possibly have been the cause of the restriction of the movements. I have not been able to find any other circumstances that might have played a part in reducing the motor power of the shoulder joint so much more than that of the more distal parts of the arm; hence I think myself quite justified in drawing the conclusion that this is a case where a cortical lesion has caused a paresis more marked in the proximal than in the distal parts of the arm. As to the leg, no paresis was present there, but the rigidity which developed later affected only its proximal parts, whereas no spastic symptoms were present in the distal parts at the close of the time of observation, not even Babinski's sign being then obtainable. The simplest explanation is unquestionably that of a lesion occupying the centre for the shoulder-joint, and affecting secondarily the nearest part of the centre for the leg, but not those parts situated at a greater distance from the first-named centre.

As it is obvious that any case bearing on the question of whether a brachial monoplegia of cerebral origin may be more

pronounced proximally than distally is of value, I shall here relate three additional cases taken from our Medical Clinic.

The first of these cases being reported in another paper (Case 22), I shall give only those details of the history that are of interest as regards monoplegia of a proximal type.

CASE 2.—K. E., 64 years old, married female. The patient suffered from Jacksonian fits, beginning in the left hand and spreading to the arm and face, followed by weakness of the arm and inability to do finer movements. Later on there was weakness also of the leg. Eight days after the commencement of the illness the active movements of the arm were diminished; the patient could only with difficulty place the arm on her head. Movements of the elbow-joint were weaker on the left side. The dynamometer showed no difference between the two hands, but the grasp of the left hand felt weaker. There was inability to execute finer movements and diminution of the tactile and especially of the muscular sense on the left hand. Astereognosis was present, and later there was apoplexy with total hemiplegia.

From the history of the case it will be seen that the centre for the hand was involved from the beginning (the Jacksonian fits started here), and showed later a distinct disturbance of the motor function affecting the finer movements of the hand, and also some sensory functions closely related to these. The coarse power was evidently much better preserved in the hand than in the shoulder- and elbow-joints.

In the second case the isolated and complicated finger-movements were also conserved.

CASE 3.—P. A. L., aged 60, workman. The patient had been addicted to alcoholic excess from about the twentieth year. Since 1880 he has repeatedly been an in-patient here on account of chronic alcoholism and alcoholic neuritis (partly ataxic neuritis of the lower extremity, partly bilateral neuritis of the ulnar nerve). Gradual signs of cardiac failure developed.

At the end of August 1902 the patient, while drunk, received an injury in the region of the left parietal bone, thereby losing consciousness. The wound was dressed by a barber. The next day the right upper extremity was paralysed with the exception of the fingers. On admission into the Medical Clinic of Upsala on the 4th of November his condition had somewhat improved.

Examination, November 1902 (notes by Mr Elfsberg, M.K.).—Heart considerably enlarged and arrhythmic, 2nd aortic sound metallic. Marked peripheral arterio-sclerosis, pulse hard, 65 per minute. Trace of albumen.

Nervous System.—Cranial nerves apparently normal. The patient

can perform all the movements with the right hand and fingers. Dynamometer, right 19, left 22. Pronation of the forearm is stronger than supination. Extension and flexion of the elbow-joint can be carried out, but with considerably diminished strength. Active flexion only to 45° . At the shoulder-joint the arm can be raised forwards to 20° ; backward extension is also restricted; abduction is reduced to a minimum; external rotation limited; internal rotation as good as on the left side. Movements of the scapula itself are intact. Passive movements of the shoulder-joint are normal. No rigidity nor atrophy. Electrical excitability normal. The motor functions are otherwise quite normal.

Sensibility, as tested with the point of a pin and a camel's hair brush, is somewhat reduced in the ulnar fingers of the left side and the corresponding part of the hand. The sense of place shows no abnormality. The sense of temperature (as tested with water at 15° and 50°) shows no alteration except over the right deltoid, where the difference between the two degrees is not recognised.

Muscular and stereognostic senses are intact.

The triceps jerks are active and equal on both sides. The wrist jerk is absent. Knee jerks are weak. Abdominal, cremasteric and plantar reflexes are exaggerated.

On May 8th, 1908, I had an opportunity of examining the patient, who was then staying at the Upsala Home for Invalids.

Vascular system as before. Nervous system: at the shoulder-joint all passive and active movements can be performed to the full extent. The strength is considerably diminished on the right side, especially as regards abduction and forward flexion. Backward flexion shows no marked difference on the two sides. Internal rotation is distinctly weaker on the right side and so is external rotation. The scapula itself moves normally. The power of extension and flexion of the elbow-joint is somewhat decreased. Dynamometer on the right side 18, on the left 21. There is no appreciable difference as regards the strength of the fingers in isolated movements, these being performed equally well on both sides. The patient can use his hand fairly well for finer movements. There is no ataxia and no disturbance of the tactile or muscular senses. Stereognostic perception shows no change.

Reflexes.—The triceps reflex is more active than normally on the right side and somewhat weak on the left; the biceps reflex is well marked on the right side, weak on the left; the knee-jerk is active on the right, normal on the left side. The Babinski sign is variable on the right side, the plantar reflex constant on the left side; the abdominal reflexes active on both sides. The triceps and pectoralis major are somewhat flabby on this side. The arm measures on the right side 27.5 cm., on the left 27 cm., the forearm 25 cm. on both sides. The right arm feels colder than the left. There is no cyanosis or œdema of the skin.

The chief question here is whether we are dealing with a central or with a peripheral (and if so, evidently a plexus) lesion.

There is no reason to suspect a real brachial neuritis, especially a fresh one.

The patient, a man 60 years of age, with a bad vascular system, received while drunk an injury on the left side of the head, followed the next day by paralysis of the right arm. The paralysis may, of course, have been a direct result of the injury, but, on the other hand, it may have been caused by pressure on the plexus during unconsciousness. The distribution of the paralysis, as this appeared three months later, viz., to the deltoid, triceps, biceps, and brachial muscles, accords well with a lesion of the plexus, according to Erb's type, and so does the diminished power of external rotation of the arm and supination of the hand. The condition of the muscles, on the other hand, is against the assumption of a lesion of the plexus. The paralysis following lesion of the plexus is always of an atrophic nature (Oppenheim), but there was in this case neither atrophy nor alteration of the electrical reaction three months after the commencement of the illness, and when I examined the patient myself, nearly six years later, I found the paresis, although diminished, still evident and almost unchanged as regards its extent, but there was no sign whatever of atrophy. On the contrary, the circumference of the right arm was somewhat increased. The process had progressed none the less to a certain degree, internal rotation of the arm being weaker. Further, some flaccidity of the great pectoral muscle could be noticed on the right side. A similar propagation of the process to the pectoralis major alone may easily be explained by the assumption of a cerebral lesion, but not by the assumption of a plexus lesion, as the nerves supplying the great pectoral muscle, viz., the anterior thoracic nerves, originate from the most proximal part of the plexus. Further, the condition of the reflexes are also against the existence of Erb's palsy (Grenet). During the patient's stay in hospital in 1902 the triceps reflex was active on both sides. When examining the patient myself I found increased reflex irritability of the right arm as well as of the leg; and, in addition to this, Babinski's sign was at this time observed on the right side, though it was inconstant.

These facts seem to justify the assumption of a cerebral lesion as the cause of the paralysis, and in view of the partial type shown from the first by the lesion, it can hardly have been anything but a cortical one.

The case thus shows the existence of a monoplegia of the arm chiefly marked at its proximal parts, and not involving even the isolated and complicated movements of the wrist and fingers.

The fourth case, which also I had the opportunity of observing myself, refers to a paralysis localised mainly in the elbow-joint.

CASE 4.—J. H., aged 44, a farmer. The illness commenced at the beginning of September 1906 with shivers and pain in the chest. Patient has since then been in bed. About one week later speech became difficult; "stiffness of the tongue" and right-sided paresis developed.

On admission, on the 19th of September, the general condition was very bad; the patient was pale and cyanotic; temperature 39.4° C., pulse 102; signs of right-sided pneumonia.

Myosis was present on the right side. Speech was blurred and slow. There was total incomplete hemiplegia. Dynamometer, left hand 25, right 15. There was no disturbance of sensation either as regards the cutaneous or the muscular senses. The knee-jerks were increased on the right side. The reflexes were otherwise normal.

September 22.—There is no facial paresis; the motility of the leg shows no abnormality. The paresis of the arm is also diminished. Dynamometer, right 16, left 20. The strength of the wrist is somewhat less on the right side. The difference is more marked at the elbow, where the power of extension in particular is considerably reduced on the right side. The shoulder-joints also present some difference on the two sides: the arm is raised and abducted less forcibly on the right side. The movements of the scapula itself are practically unaffected.

At a later stage there were frequent and severe rigors, the physical signs being at first unaltered. As the abdomen showed no abnormality and there were no signs of any metastatic process, it was considered probable that an abscess of the lung was developing. Dullness over the right lung, increasing suddenly, and a rapid change for the worse in the general condition were the first signs of an empyema, which was therefore considered to be perforating. The patient was transferred to a surgical ward. The operation showed a perforation of the lung and a communication between the empyema and an intrapulmonary cavity. Death on October 2nd.

Post-mortem examination showed two empyema cavities with well-defined walls, communicating with a cavity in the lower lobe of the lung and two other abscesses in the lung.

Brain.—Over the middle third of gyrus centralis anterior and the adjacent part of gyrus frontalis medius the pia mater showed an area of about 2 cm. diameter with diffuse borders in which there was considerable infection. Corresponding to this area the brain substance was somewhat prominent without any difference in consistence. The

hardened brain showed on frontal section a distinct hyperæmia of the cortex over this area.

Microscopical examination showed obvious changes within this part, viz., considerable hyperæmia of the pia mater, of the cortex, and the most superficial part of the subcortex. Over an area of $\frac{1}{2}$ cm. round the posterior part of superior frontal sulcus the pia mater is highly infiltrated with round cells, especially in the neighbourhood of the vessels. Outside of this area also there are small groups of round cells seen around the vessels. In the most superficial part of the subcortex there was a commencing softening, otherwise only hyperæmia and proliferation of the endothelium. The microscope revealed no changes outside the area of the macroscopical lesion.

The rapid development and very marked improvement of the local symptoms had led to a diagnosis of encephalitis, and this was confirmed by the histological examination.

However interesting this point may be, I cannot discuss it here, but must content myself with touching upon those facts which have a bearing upon the question "proximal paralysis."

The hemiplegia showed a peculiar character. On admission it was total and incomplete; three days later there was a brachial monoplegia, not, as is usually the case, most marked in the hand, but, on the contrary, much diminished there. It was well marked at the elbow-joint, but it could not be ascertained whether it had increased there, as it was impossible to examine the patient minutely at the time of admission on account of his condition.

The pathological cause of this paralysis was found to be an inflammatory process in or near the arm-centre. I can give no detailed localisation of special foci in the affected area, but judging from its size it probably extended considerably beyond the centre for the elbow-joint. This can be accurately determined only by means of stimulation.

The case thus shows that a slight lesion of a great portion of the arm-centre may give rise to marked reduction of the coarse power of the elbow, at the same time almost completely sparing that of the hand. Unfortunately no notes were made in this case as regards the power of isolated and of finer movements in the fingers.

The cases just related seem to prove the possibility of a brachial monoplegia of cerebral origin which is chiefly marked

in the proximal area. In all the four cases described the reduction of the coarse power was least marked in the hand. In Cases 1 and 3 its power of carrying out isolated and complicated movements was fully conserved, as well as the stereognostic perception, although there was a high degree of paresis in the elbow- and shoulder-joints.

Therefore I am in a position to point out, in opposition to Bonhöffer's teaching, that lesions of the middle part of the central convolutions always affect the hand chiefly or exclusively; that there are cases in which a cortical lesion leads to greater functional disorder of a more proximal joint; and that not only the coarse power but also the power of isolated and associated movements (the latter being characteristic for the cortex) may be well conserved in the fingers.

The proximal type of brachial monoplegia to which I have here called attention may with a great degree of certainty be associated with a lesion which, as in Henschen's case, chiefly involves that part of the arm-centre which lies outside the area of projection of the hand.

As this centre is also subdivided into other centres, cases ought to occur in which, provided the above reasoning be correct, the functional disturbance (the paralysis and loss of isolated movements) has affected chiefly or only certain fingers. A considerable number of such cases have, as a matter of fact, been recorded: Gros, paralysis of the thumb and index finger; Lépine, paralysis of the four ulnar fingers; Fox, paralysis of the three ulnar fingers; Zenner, ring and middle fingers; Wernicke, thumb; Monakow (p. 671), thumb and index finger; Mills and Weisenberg (Case 4), the index and middle fingers are first paralysed, later on the ring and little fingers; Bonhöffer (Case 2), paralysis of the opposing muscles of the thumb, and (Case 4) paralysis of the thumb; Kramer (Case 5), index finger; Fischer, paralysis of the three ulnar fingers, especially the ring and little fingers; Binswanger, a large parietal lesion, the paresis most marked in the thumb; Förster, paresis of the interosseous muscle of the little finger, due to a minimal lesion in the anterior central convolution; claw position of the four ulnar fingers after operation.

To the list of such cases, others of which may be found in the literature, I may also add a few.

In one case with Jacksonian epilepsy, on account of a sub-cortical abscess, I could ascertain that the patient, during an attack of severe contractions in the muscles of the shoulder and elbow, retained the power of voluntary movements in the thumb. After the fit, when the monoplegia was otherwise complete, the patient was still able to move his thumb.

In three other cases I found paresis of the fingers varying somewhat in degree, being in the two latter cases least and in the first most marked in the thumb. This was so also in a case lately observed by Professor Petré.

The above statements seem to justify the assertion that from a clinical point of view also one may speak of localisation in Munk's sense of the various subcentra for the arm and hand, as a lesion of the centre for the arm need not necessarily most affect the function of the hand, but may involve some other part of the upper extremity (the elbow or shoulder-joint), and if the hand is implicated its function need not be impaired as a whole, as several cases of more or less isolated paralysis of the fingers are known, and this applies to the coarse power as well as to the isolated movements.

Besides this, Oppenheim's case (Case 5), which I have previously quoted, as well as my own (Case 1), indicate that a paresis or spasm due to a lesion situated above the capsule may also assert itself more proximally than distally in the lower extremity.

With regard to the great majority of cases, however, it holds good, as has been stated by Bonhöffer, that the function of the hand is exclusively or most markedly involved, and this applies not only to cortical but also to capsular lesions. In some cases of vascular lesions of the cortex this can be explained by the distribution of the vessels. The centre for the shoulder lying opposite or somewhat below the sulcus frontalis superior is almost at the boundary of the areas of distribution of the anterior and middle cerebral arteries (Beavor), whereas the centre for the hand lies within an area supplied only by the middle cerebral artery. On this account the centre for the shoulder, and to a lesser degree that for the elbow, are more favourably situated as regards collateral blood-supply than is the centre for the hand in cases of vascular lesion within the area supplied by the middle cerebral artery.

This simple explanation, however, may be hardly sufficient

in the great majority of cases where the paralysis is most marked in the hand. One case under my observation cannot be explained in this way. In it there was a brachio-crural monoplegia, the paralysis being most marked in the leg, but showing a distinct distal type both in the arm and leg. Still less can a distal paralysis caused by a capsular lesion be accounted for in this way. A theory has been advanced in explanation of this type, characteristic of cerebral hemi- or monoplegia, referring chiefly to cortical paralysis. It is to the effect that the area of projection of the hand is much larger than that which corresponds to the result obtained by electrical stimulation, and that consequently the centre for the arm is more easily injured (Fr. Müller). It is certainly curious that a diffuse projection should show itself more readily by symptoms of loss of function than of irritation, more especially as cases such as that just recorded, in which voluntary movements in the thumb were associated with proximal spastic contractions during a Jacksonian fit, show that this does not apply solely to experimental electrical stimulation. Even were the projection entirely non-excitabile—which might be due to the function being chiefly of associative character, a supposition which gains ground (Rothmann) from experiments on the higher apes, in which section of the pyramidal tract does not produce loss of isolated finger movements—the result of a widely-spread projection ought rather to be, as Müller has also pointed out, that the non-affected areas compensate for the partial lesion than *vice versa*. Müller has also pointed out that the theory of a diffuse projection has in this way been used to explain why central vision may be unimpaired in cerebral lesions (Monakow, p. 659).

Another hypothesis has been advanced by O. Fischer. As in the case of different animals, the motor functions become more and more dependent, as development increases, upon the cerebral hemispheres, so in the case of man the associated movements of higher development which, as regards the hand, play an important part as compared with “movements as a whole,” are most sharply localised in the cortex of the cerebral hemispheres. It follows that the power of compensation must be less good in the case of a lesion affecting their centres. Consequently a lesion in that region must necessarily most permanently affect the differentiated movements, while, on the other hand, the coarse power may be practically restored.

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Abstracts

ANATOMY.

THE RADIX MESENCEPHALICA TRIGEMINI. J. B. JOHNSTON,
(182) *Journ. Comp. Neurol. and Psychol.*, Vol. xix., No. 6, 1909.

THE purpose of the paper is to indicate the comparative anatomical evidence which the author has collected during several years, that the mesencephalic root of the trigeminus leaves the brain in the sensory root and has no relation to the motor root. A large series of vertebrates, including fishes, amphibians, reptiles, mammals and human embryonic and foetal brains, have been studied, and in all cases the bundle in question belongs to the sensory root. The author also demonstrates anatomically the origin of the fibres from the cells of the locus cœruleus and the corpora quadrigemina. This has been abundantly proved by other investigators using the Golgi and Cajal impregnations and the methods of degeneration (Waller's and von Gudden's). The author points out that the origin of fibres from cells in the brain is *no evidence* that the bundle in question is motor. Only the *connections* of fibres determine whether they are sensory or motor. These fibres belong to the sensory root and are presumably distributed to the skin (or to muscle sense organs). The cells of origin in the brain are possessed in many cases of true axones which enter the gray of the tectum mesencephali, a sensory centre. The author suggests the hypothesis that the cells belong to the same category as the dorsal or giant cells of the spinal cord in fishes and amphibians, and are equivalent to peripheral ganglion cells.

AUTHOR'S ABSTRACT.

RESEARCHES ON THE INTERNAL NETWORK OF GOLGI IN
(183) **THE NERVE CELLS OF THE SPINAL GANGLIA.**
(*Recherches sur le reseau interne de Golgi des cellules nerveuses des ganglions spinaux.*) LEGENDRE, *Comptes Rend. H. des Séances de la Soc. de Biol.*, Nos. 1-2, 1910.

THE internal network of Golgi is known to be different from the neurofibrillary network of nerve cells, but what it really represents is not yet settled. The employment of the new method of Golgi led some to think that it was identical with the chromophile substance of the nerve cells. This hypothesis has been supported on morphological, chemical and physiological grounds, but Collin and Lucien have been able to colour simultaneously the network

and the chromophile substance and to see that they occupy different positions in the cell.

The author has confirmed this observation and states that the method of Golgi is not suitable to determine whether the internal network is identical with the chromophile substance or not.

R. G. ROWS.

PATHOLOGY.

ON THE PATHOLOGY OF THE CRANIO-PHARYNGEAL CANAL.

(184) (*Zur Pathologie des Canalis craniopharyngeus.*) WALTHER HABERFELD, *Frankfurter Zeitschr. f. Pathologie*, Bd. iv., H. 1, p. 96, 1910.

A LONG account of the literature on the cranio-pharyngeal canal is given. Landzert, who first described it, stated that the canal is present in 10 per cent. of new-born infants. Haberfeld examined thirty such subjects microscopically, and another thirty by macerating the sphenoid bone. In none of these was there a complete canal, but quite commonly a shallow depression in the floor of the sella turcica. Microscopically connective tissue and some pituitary remnants were found, but they did not pass deeply into the sphenoid bone. The author is of the opinion that other observers have mistaken for a canal the part of the sphenoid bone where ossification is latest. Maceration of the bone in the foetus displays a false canal where ossification is not complete. The position of the true cranio-pharyngeal canal does not coincide with that of the false canal.

Six cases where a cranio-pharyngeal canal was found are described. All were accompanied by gross malformations, anencephalus, encephalocele, hydrocephalus, and cleft palate. In all the canal was complete and pituitary tissue was present. One case of anencephalus showed a canal which contained pituitary tissue throughout. The cases of occurrence of a canal in the literature are discussed.

The author further examined the base of the skull in a series of animals. In most of these no traces of a canal or of pituitary remnants were found. In a hare and in a rat traces of pituitary tissue appeared, but no canal. In four cats both craniopharyngeal canal and pituitary remnants were present.

PERCY T. HERRING.

THE PHYSIOPATHOLOGY OF THE OPTIC THALAMUS. (La

(185) *fisiopatologia del talamo ottico.*) G. D'ABUNDO, *Riv. Ital. di Neuropat., Psich., ed. Elettrotet.*, Vol. ii., Fasc. 2.

AFTER dealing with the present position of the physiopathology of the optic thalamus the author described his experiments on adult

dogs and new-born cats. The operations were performed by trephining the animals, incising the dura mater, and introducing a blade of a small curved scissors through the corpus callosum and producing a lesion of the thalamus.

The following are the chief results obtained:—a limited unilateral destruction of the optic thalamus produced a transitory crossed deficiency of vision which was more marked and more permanent when the posterior part was affected; wide destruction of one thalamus caused a crossed blindness which lessened after a time but never disappeared. Lesion of the postero-external periphery of the optic thalamus produced a slight transitory deficiency of general sensibility; a marked deficiency occurred only when the internal capsule was injured, and was then associated with an ataxic gait and disturbances of motility. Changes in the physiognomy and in mimicry followed a diffuse lesion of one thalamus, but gradually disappeared; a bilateral lesion gave rise to a permanent alteration. A mental change, a state of dementia, accompanied a diffuse bilateral destruction, especially of the antero-internal region.

Lesion of the thalami never produced chorea or tics; these affections were seen in one case in which the cerebral peduncles were injured. The author concludes that the optic thalamus must be considered an important intermediary centre of association.

In the cases of operations on new-born cats a partial lesion of the thalamus gave rise to no symptoms of importance which persisted when the animal grew up. An almost complete destruction of one thalamus produced a cross blindness with atrophy of the papilla and a diminution in the size of the eyeball in the adult. Partial and total lesions in the kitten were followed by a hypotrophism of the corresponding cerebral hemisphere and a hypertrophy of the caudate nucleus; this also accompanied ablation of the occipital pole. Bilateral lesions produced permanent visual deficiency, weakness of olfactory sensibility and a state of dementia. There was no disturbance of general sensibility or movement, and no sign of chorea or tics. R. G. Rows.

THE PHARYNGEAL - ROOF HYPOPHYSIS, OTHER HYPOPHY-

(186) **SEAL DUCT REMAINS AND THEIR PATHOLOGICAL IMPORTANCE.** (*Die Rachendachhypophyse, andere Hypophysengangreste und deren Bedeutung für die Pathologie.*)
HABERFELD, *Ziegler's Beiträge*, Bd. 46, H. 1.

HABERFELD has examined the roof of the nasopharynx from fifty-one cadavers of various ages, and has recognised in all of them the pharyngeal-roof hypophysis. Erdheim had previously stated that this structure was only present in the foetus and new-born. The

organ lies in the submucous connective tissue in the middle line of the nasopharynx, where posterior border of the septum nasi joins the roof; it runs from below and in front upwards and backwards, like the cranio-pharyngeal canal, and does not reach the basi-occipital. The structure is thread-like, with a club-shaped anterior end, which sometimes dips into the adenoid tissue. The size varies from 3 mm. in the foetus to 6 mm. in the adult. In the foetus the parenchyma is solid, but in adults alveolar formation is always present; the number of the colloid containing sacs increases with age; they are lined by cells which may form from two to six rows, and in which the chromophobe cells predominate. Squamous epithelial cell clusters are not found in the foetus, but are common in adults. The small size of the organ renders it of little physiological importance.

J. S. FRASER.

ADENOIDISM AND HYPOPHYSIS. (*Adenoidismus und Hypophyse*). POPPI, *Internat. Zentralbl. f. Ohrenheilk.*, Bd. 8, Heft 1.

It has long been thought that certain disturbances of a general character, which are associated with hypertrophy of the pharyngeal tonsil, are not due to mechanical hindrance of nasal respiration, nor to stasis in the blood- or lymph-vascular system, but to an internal secretion which influences the metabolism of the organism (Harrison Allen, 1891). In 1898 Massini found that tonsillar extracts increased the blood pressure, and put forward the theory that adenoidism might be due to loss of some substance normally produced by Lushka's tonsil. Simoni investigated the subject of cretinism in the Vale d'Aosta, where there are also many cases of "adenoids," and convinced himself of the probability of a common etiology. Arslan, and later Holz, recorded cases of cure of exophthalmic goitre by removal of adenoids. Spieler and Escherich have also written on the same lines. Poppi has recorded two cases of Basedow's disease, one of glaucoma, and three of skin pigmentation with epistaxis, etc., in which improvement took place after removal of adenoids. Arai has by injection traced the communication between the cerebral hypophysis and the periosteum of the inferior surface of the sphenoid.

In mounting from its seat of origin to the sella turcica the cerebral hypophysis leaves behind a trace of tissue along its course, just as the thyroid gland may do, and Citelli has traced the vascular connection between the adenoid growths and the cerebral hypophysis in children. The cranio-pharyngeal canal persists in ten per cent. of the new-born, and Romiti has recorded a case in a child of five years: the canal persists normally in some anthropoid apes. On the other hand, Sternberg has proved an

hypertrophy of Waldeyer's lymphatic ring in acromegaly, and Levi has noted the persistence of the cranio-pharyngeal canal in two cases of the same disease. Poppi himself traces the connection between adenoidism and the hypophysis to abnormal vascular connection between the hypophysis and the pharyngeal mucosa along the route of the cranio-pharyngeal canal, although on histological examination of "adenoids" after removal he could find no trace of hypophyseal tissue.

J. S. FRASER.

EOSINOPHIL AND BASOPHIL ADENOMA OF THE PITUITARY BODY. (188) **TARY BODY.** (Ueber das eosinophile und basophile Hypophysenadenom.) J. ERDHEIM, *Frankfurter Zeitschr. f. Pathologie*, Bd. iv., H. 1, p. 70, 1910.

THE author records two cases of adenoma of the pituitary body. In the first, occurring in a woman 42 years of age, the most prominent clinical features were diabetes mellitus and exophthalmic goitre. The post-mortem revealed extensive lesions of the viscera, pyelonephritis, atrophy of the internal genitals and medulla of the suprarenals. In the anterior lobe of the pituitary a small adenoma $1\frac{1}{2}$ mm. in diameter was found. Microscopically it was composed exclusively of basophil cells, which resembled the basophil cells of the normal anterior lobe in all respects save that they were smaller and contained no fat droplets. The staining reactions of the normal cells of the anterior lobe are discussed, and the author gives reasons for believing that the basophil and eosinophil cells are independent bodies, and not merely different functional stages of the same kind of cell. He can give no explanation of the significance of the basophil cells, but does not think they have any relation to the exophthalmic goitre.

In the second case, a man of 43, there were mental symptoms, some enlargement of the extremities, but no optic changes. A diagnosis of acromegaly was made. Death resulted from pyæmia. Evidences of syphilis were present. The pituitary was enlarged, and the anterior lobe contained a sharply defined tumour of an adenomatous character. Unlike the tumour of the first case, this one consisted of eosinophil cells which closely resembled the eosinophil cells of the normal anterior lobe. The stroma was very small in amount, and here and there were small collections of a granular or colloid secretion. The author quotes the opinion of Benda that the eosinophil cells are characteristic of acromegaly. He further argues from the growth of the tumours that they are malignant in character.

Several microphotographs illustrate the appearances presented by the tumours.

PERCY T. HERRING.

DIAGNOSIS OF TUMOURS OF THE PINEAL BODY. (Über
(189) *Diagnose der Zirbeldrüsentumoren.*) FRANKL-HOCHWART,
Wien. med. Woch., No. 9, Feb. 26, 1910, p. 506.

IN this paper a description is given of a case of cerebral tumour in a boy of $5\frac{1}{2}$ years of age. At the autopsy the pituitary was found to be normal, and a large tumour, an embryonic teratoma, of the pineal body was discovered. The writer compares the case with three other similar cases on record, those of Ogle, Gutzert, and Heubner, and concludes that, when, in early life, besides the general symptoms of tumour and of involvement of the corpora quadrigemina, abnormal growth in length, unusual increase of hair, adiposity, somnolence, premature sexual development and mental precocity are present, a diagnosis of tumour of the pineal body is to be considered.

A. NINIAN BRUCE.

**THE HISTOLOGICAL EVIDENCE THAT TOXINS REACH THE
(190) SPINAL CORD VIA THE SPINAL ROOTS; WITH
SPECIAL REFERENCE TO PLASMA CELLS.** DAVID ORR
and R. G. ROWS, *Journ. Ment. Sc.*, Jan. 1910.

IN the present, as in the earlier, series of experiments, a capsule containing a broth culture of an organism was placed by the sciatic nerve, and the histological changes in the sheath of the nerve and of the spinal roots were examined. Transverse sections at the level of the capsule showed that there was a mass of inflammatory tissue present in which three distinct layers could be recognised: (1) a layer of degenerated polymorphonuclear leucocytes, and cells with a large nucleus and a considerable quantity of protoplasm which stained imperfectly and showed marked regressive changes; (2) a fibrous layer, in the meshes of which were many well-stained round mononuclear cells; (3) a layer of mononuclear cells and typical plasma cells. In the perineural sheath of the sciatic nerve itself plasma cells were found in groups around the dilated veins and capillaries, in the adventitial sheaths of the vessels, and a few in the tissue spaces. None were seen around the arteries. Proliferation of the cells of the adventitial sheath and of the endothelium was also present. Similar changes were seen around the vessels within the nerve, and they could be traced along the sheath of the nerve, in the sheath of the posterior root ganglia, and along the sheath of the spinal roots to the spinal cord. These lesions were evidently the product of the irritation of the toxin which passed from the capsule along the lymph paths to the spinal cord.

Attention was drawn to the similarity between these changes

and those found in general paralysis of the insane, which are now admitted to be the result of a toxi-infective encephalitis.

AUTHORS' ABSTRACT.

CHANGES FOUND IN THE SPINAL GANGLIA AND SPINAL CORD IN A CASE OF LUPUS ERYTHEMATODES, WITH ACUTE RELAPSE. (Ueber einen positiven Spinalganglien und Rückenmarksbefund bei einem Fall von Lupus erythematodes, mit akutem Nachschub.) BIACH, *Arch. f. Dermatol.*, Bd. 99, Heft 1-2, S. 5.

THE spinal cord and ganglia were examined in a woman of 22 years, who died of acute generalised lupus erythematosus. The cord showed a slight meningomyelitis, the meninges being more affected than the cord and showing an infiltration such as is seen in cases of meningitis serosa. The cord showed small foci of myelitis and minute multiple hæmorrhages.

The changes in the ganglia were much more chronic, and consisted of a pigmentary degeneration of the cells, with a marked overgrowth of the capsule-endothelium and of the connective tissue elements.

The author considers the changes in the spinal cord similar to those described as occurring in acute infectious diseases, whilst those in the ganglia are of longer standing and possibly in important relation to the condition of the skin.

R. CRANSTON LOW.

PATHOLOGY AND TREATMENT OF TABES DORSALIS. (Pathologie und Behandlung der Tabes dorsalis.) STRÜMPPELL, *Wien. med. Wchnschr.*, Nr. 1 and 6, 1910, pp. 10 and 322.

THE writer gives his views upon the nature and treatment of this disease in a series of clinical lectures. He regards the disease for the sake of simplicity as one affecting the centripetal fibres of the nervous system, and he accordingly classifies the symptoms into five groups:—(1) Those proceeding from the sensory nerves of the skin; (2) those from the sensory nerves of the voluntary motor apparatus; (3) those from the nerves of the special sense organs; (4) those from the centripetal nerves of the involuntary muscular organs; (5) those from the pain-conveying nerve fibres of the internal organs. There is nothing particularly new to record from these lectures, but it may be noted in passing that the lecturer's explanation of lightning pains is that they spring from the degenerative processes going on in the peripheral sensory nerves.

JOHN D. COMRIE.

THE VARIABILITY OF THE LESIONS IN POLIOENCEPHALOMYELITIS. K. BREMER, *Lancet*, Feb. 12, 1910, p. 421.

THIS is an analysis of 171 cases out of some 400 sporadic cases which have been seen at the Great Ormond Street Hospital for Sick Children during the last ten years. Forty-eight showed some evidence of an encephalitis, only 11 of lesions in both brain and cord.

The statistics cannot be quoted in full. They show, however, that of the spinal cord lesions the lumbar enlargement on one side was the commonest site, next the lumbar enlargement bilaterally, then bilateral involvement of lumbar and cervical enlargement, and then the cervical enlargement unilaterally. Other combinations and involvement of the dorsal region come a good way behind. Paralysis of the muscles of the neck and back are fairly common, but generally associated with palsies elsewhere, such as limbs or face. Involvement of sphincters was rare; hyperæsthesia was a common early symptom; anæsthesia only occurred once, when the lesion was found to approximate to a transverse myelitis in the dorsal region. Of the brain lesions, involvement of the facial nucleus easily heads the list; after it come about equal lesions of the cerebello-rubrospinal tract producing slow rhythmic tremor, the cerebellum, and the motor cortex, with much less frequent affections of other sites.

J. H. HARVEY PIRIE.

A NEW CASE OF MOTOR APHASIA WITH ANATOMICAL REPORT. (Ein neuer Fall von motorischer Aphasie mit anatomischen Befund.) H. LIEPMANN (of Berlin) and F. QUENSEL (of Leipzig), *Monatsschr. f. Psych. u. Neur.*, Sept. 1909.

THE patient was a widow of approximately 70 years of age, who presented the following clinical features:—(1) A complete motor aphasia, with practically complete elimination of spoken speech (with inability to repeat as well as to speak spontaneously). (2) A difficulty of understanding spoken speech, which varied independently of the emissive difficulty. (3) Apraxic symptoms, mainly ideatory in nature, of variable intensity.

Anatomically the most important lesion was an old focus of softening in the left frontal and central region; the focus involved (1) the opercular portion of F 3, (2) the foot of F 2 at its passage into the anterior central convolution, (3) a part of the Rolandic operculum corresponding to the anterior central, and also more dorsal portions of the central convolutions. The depth of the lesion was not sufficient for it to reach the callosal fibres except at a few points.

The lenticular zone, in the sense of Marie, was absolutely intact. The case, therefore, would tend to confirm the classical aphasia doctrine.

Other lesions were: (1) A large recent softening in the right hemisphere which had caused the fatal issue. (2) An old small focus in the left occipital pole, not directly involving the visual centre, but partially interrupting the optic radiations. (3) Numerous miliary and sub-miliary foci in the white matter of the left hemisphere. (4) Vascular changes involving a small portion of the supramarginal gyrus.

The author discusses the relation of the clinical to the anatomical findings, and compares his case with similar cases of Déjerine, Liepmann, Ladame-Monakow. He calls attention to the fact that in the present case the destruction of the opercular part of the third frontal was only partial, involving its posterior half; the exact rôle played by the adjacent part of the focus in the production of the complete aphasia was doubtful. To explain the complete motor aphasia the author refers to the possibility that a centre may be thrown out of gear when only one part of it is visibly destroyed, and to the second possibility that there is individual variability in the topographical limits of certain cortical mechanisms.

C. MACFIE CAMPBELL.

LYMPHOCYTOSIS AND CLEAR CEREBRO-SPINAL FLUID IN (195) ACUTE MENINGOCOCCAL MENINGITIS. POLYNUCLEOSIS IN THE CEREBRO-SPINAL FORM OF TUBERCULOUS MENINGITIS. (Lymphocytose et liquide céphalo-rachidien limpide dans un cas de méningite aiguë à méningococques. Polynucléose dans un cas de méningite tuberculeuse à forme cérébro-spinale.) F. CARLES and R. DUPÉRIÉ, *Journ. de méd. de Bordeaux*, 1910, p. 55.

CASE 1.—Girl, aged 2½ years, admitted to hospital on the fourteenth day of an illness characterised by emaciation, headache, constipation, repeated convulsions, and involuntary micturition. During the six days she was in hospital she showed no Kernig's sign nor nuchal rigidity. For a few days before death ocular palsies and irregularity of pulse and rhythm were very marked. Lumbar puncture gave issue to a clear fluid rich in lymphocytes and meningococci.

Similar findings were made by Netter and Debré, and Salebert and Louis (*v. Review*, 1909, p. 606).

CASE 2.—Boy, aged 15 years. Sudden onset with violent headache and insomnia. On admission to hospital there were intense nuchal rigidity and marked Kernig's sign. The cerebro-spinal

fluid was clear, and contained abundant tubercle bacilli but no other organisms. The polymorphonuclears were 56·36 per cent.

The writers mention two other cases of tuberculous meningitis recently seen by them in which the polymorphonuclears were 58·9 and 64·8 per cent. respectively.

J. D. ROLLESTON.

**SYPHILIS AND INSANITY. A STUDY OF THE CEREBRO-
(196) SPINAL FLUID.** ROSANOFF and WISEMAN, *Amer. Journ.
of Insanity*, Jan. 1910, p. 419.

THIS valuable article is based on the study of 409 cases in which the cell count, the Wassermann reaction and the butyric acid test were investigated. Noguchi's modification of the Wassermann reaction was employed; in this an anti-human hæmolytic system is used instead of an anti-sheep system. The acetone-insoluble fraction of tissue lipoids is used as antigen instead of a water extract from luetic liver, and the antigen and amboceptor are used in the form of test papers. The technique made use of is clearly described. The authors' conclusions are as follows:

(1) The regular absence of lymphocytosis, of the Wassermann reaction, and of the butyric acid reaction in psychosis with a basis of arteriosclerotic disease known to be the result of old syphilitic infection indicates that these conditions are to be regarded as sequelæ of syphilis, and that the syphilitic process itself is in cases of these conditions already extinct.

(2) In general paresis either the Wassermann reaction or Noguchi's butyric acid reaction is invariably found—and most frequently together;—no doubt of the essential dependence of general paresis upon syphilitic infection can any longer be entertained.

(3) Inasmuch as the Wassermann reaction and the butyric acid reaction seem to indicate syphilis only when it exists in an active or potentially active form, their regular occurrence in general paresis would tend to prove that that disease is a manifestation of active syphilis, of activity of the *spirochæta pallida*; while the evidence for this view is not as yet complete, it is sufficient to justify its being used as a basis of therapeutic essay.

(4) In no other common psychosis does either the Wassermann reaction or the butyric acid reaction occur with any regularity or even with special frequency; the relation of syphilis to these psychoses is that of a complication by accidental coincidence.

(5) From the standpoint of diagnosis, cytological examination of the cerebro-spinal fluid is an indispensable aid in the practice of psychiatry; with the further aid of the Wassermann reaction and of Noguchi's butyric acid reaction the diagnosis of general paresis can be either established or excluded with practical certainty.

ERNEST JONES.

ON THE NIGHTMARE: A. PATHOLOGICAL. ERNEST JONES, (197) *Amer. Journ. of Insanity*, Jan. 1910, p. 383.

A REVIEW is given of the current hypothesis (circulatory, respiratory, and gastric) concerning the origin of this disorder, and the total lack of correlation pointed out between its occurrence and that of the troubles supposed to cause it. Attention is then directed to the most constant and prominent symptom, the appalling dread and terror, and the recent work is mentioned that demonstrates the dependence of this on "repressed" sexual desire. The conclusions reached are that "nightmare is a form of anxiety attack, that it is essentially due to an intense mental conflict centering around some repressed component of the psycho-sexual instinct, and that it may be evoked by any peripheral stimuli that serve to arouse this body of repressed feeling; the importance, however, of such peripheral stimuli in this connection has in the past been greatly over-estimated as a factor in the production of the affection."

AUTHOR'S ABSTRACT.

PSYCHOLOGY.

THE OEDIPUS-COMPLEX AS AN EXPLANATION OF HAMLET'S (198) MYSTERY: A STUDY IN MOTIVE. ERNEST JONES, *Amer. Journ. of Psychology*, Jan. 1910.

AFTER reviewing the previously offered explanations of Hamlet's apparently causeless and localised inhibition, Freud's explanation is developed, namely, that it was due to the action of an infantile complex of the kind known as the Oedipus-complex. An account is given of Freud's incest theory, and general remarks are made on the significance of the changes Shakspeare introduced into the original Hamlet legend, on the relation of this to other legends and myths, on the sources of poetic creativeness, and on the subjects of motive and conduct.

AUTHOR'S ABSTRACT.

CLINICAL NEUROLOGY.

NEUROFIBROMATOSIS OF THE TONGUE IN A CHILD, TOGETHER WITH A NOTE ON THE CLASSIFICATION OF INCOMPLETE AND ANOMALOUS CASES OF RECKLINGHAUSEN'S DISEASE. F. PARKES WEBER, *Brit. Journ. Children's Diseases*, Jan. 1910, Vol. vii., p. 13.

THE patient, a boy, 6 years of age, had a hard swelling below the tongue, which had almost certainly been observed before he was one year old. The projecting portion of the tumour was situated

along the right side of, and parallel to, the frænum linguæ, measuring about 5 mm. in breadth and 10 mm. in length; the mucous membrane over it appeared healthy. The projecting portion was removed, and microscopical examination (Dr J. C. G. Ledingham) showed bundles of medullated nerve fibres bound together by a close connective-tissue stroma. A hard cord could still be felt to the right of the boy's frænum linguæ, doubtless representing part of the lingual branch of the fifth cranial nerve. The tumour probably constituted a mild form of a "hemi-macroglossia neurofibromatosa," a condition described by Abbott and Shattock in 1903 and Spencer and Shattock in 1907. As anomalous or incomplete forms of Recklinghausen's disease Weber would include:—(1) Plexiform neuroma or "elephantiasis nervorum" unaccompanied by multiple molluscos tumours of the skin; (2) multiple molluscos tumours of the skin unaccompanied by any obvious neurofibromatosis of nerve trunks; (3) certain cases of cutaneous pigmentation of the neurofibromatosis type, but not (as yet) accompanied by obvious neurofibromatosis of nerve trunks or cutaneous molluscos tumours; (4) cases of neurofibromatosis complicated by the co-existence of bony or epidermic (papillomatous) changes—of any extent up to that met with in the so-called "elephant man" formerly in the London Hospital.

AUTHOR'S ABSTRACT.

REPORT ON AN OUTBREAK OF MULTIPLE PERIPHERAL (200) NEURITIS. Lt.-Col. H. S. M^cGILL, *Journ. of the R.A.M.C.*, Feb. 1910, p. 194.

THIS epidemic occurred in a British infantry regiment stationed at Poona in Sept.-Oct. 1907. There were altogether sixty-one cases exhibiting in varying degrees of severity the symptoms of multiple peripheral neuritis, with a peculiar affinity for the vagus nerves. One case was fatal. Alcohol was undoubtedly an important factor in the causation, nearly all the men having been immoderate beer drinkers. Some other agent must have been responsible for the epidemic outbreak, but the only conclusion that the writer was able to come to was—that it was of a beri-beri type, though not originating from any of the commonly accepted causes of that disease, but undoubtedly predisposed to, if not excited by, the excessive consumption of beer.

J. H. HARVEY PIRIE.

SCARLATINAL ULNAR MONONEURITIS. (Mononeurite ulnare (201) scarlatinosa.) U. BIZZARRI, *Riv. crit. di clin. med.*, 1910, p. 4.

A GIRL, aged 17, had a severe attack of scarlet fever. Two days after the temperature had become normal, sensory followed by

motor symptoms of right ulnar neuritis developed. Two months after the onset of the paralysis improvement set in, and finally there was complete recovery.

Peripheral neuritis in scarlet fever is very rare. In the few recorded cases several nerves have been affected. The localisation of the neuritis in the present instance was probably due to the decubitus, as in the ulnar neuritis following typhoid fever (*v. Review*, 1909, p. 737).

J. D. ROLLESTON.

RECURRENT HERPES ZOSTER. (*Un cas de zona récidivant.*)

(202) LECLERC and COLOMBET, *Lyon méd.*, cxiii., 1909, p. 1130.

A WOMAN, aged 35, of neuropathic disposition, who had been treated for intercostal neuralgia in 1907, developed extensive herpes zoster of the right arm and right side of the thorax in March 1909. The eruption was followed by neuralgic pain, œdema, and weakness without actual paralysis of the right arm, together with stiffness of the neck and shoulder. These symptoms persisted until the following November, when an eruption appeared of similar character and localisation to that which she had had eight months previously. Herpes of the lower lip was also present. The cerebro-spinal fluid showed slight hypertension, some lymphocytosis and definite traces of albumin.

J. D. ROLLESTON.

PARALYSIS OF THE RIGHT SERRATUS MAGNUS FOLLOWING

(203) **MEASLES.** (*Paralysie du muscle grand dentelé droit consecutive à une atteinte de rougeole.*) G. BERTRAND and M. CHAILLY, *Presse méd.*, 1909, p. 611.

A SOLDIER, aged 21, in convalescence from measles, developed complete paresis of the right serratus magnus together with paresis of the trapezius and posterior portion of the deltoid. The writers think that all other possible causes, such as syphilis, rheumatism or alcohol, could be excluded (*cf. Review*, 1909, p. 778).

J. D. ROLLESTON.

A CASE OF MYASTHENIA GRAVIS. COLIN K. RUSSEL, *Montreal*

(204) *Med. Journ.*, Vol. xxxviii., Dec. 1909, p. 821.

THE patient, after having well-marked symptoms of the disease for some time, had a remission of all symptoms for five years, and then, following severe mental strain, developed certain ocular palsies suggesting a recurrence of the disease.

A piece of muscle removed under local anæsthesia showed that certain bundles of fibres, which could be followed through a series of sections, did not take the stain properly. These fibres almost

invariably showed longitudinal splitting; other fibres showed marked vacuolation.

No trace of lactic acid could be found in the urine.

AUTHOR'S ABSTRACT.

LOCOMOTOR ATAXIA AND PARALYSIS AGITANS IN THE
(205) **SAME PATIENT.** A. A. ESHNER, *Amer. Journ. of Med. Sci.*,
Nov. 1909.

THE case is published on account of the rarity of both diseases occurring in the same patient. It is looked upon merely as a coincidence.
D. K. HENDERSON.

THE EPIDEMIC OF SPINAL DISEASE IN NEBRASKA. G. P.
(206) SHIDLER, *Journ. Amer. Med. Ass.*, Jan. 22, 1910, p. 277.

THIS paper illustrates very well the difficulties experienced by practitioners in the diagnosis of epidemics in new neighbourhoods. This particular one occurred in Nebraska in July, August, and September last, affecting chiefly children under ten, but also young adults. It was variously diagnosed as cerebro-spinal meningitis, acute poliomyelitis and myelitis. From the account given it seems clearly to have been one of acute poliomyelitis, but the symptoms met with were by no means of the classical type. Meningeal symptoms were usually prominent, but lumbar puncture dismisses the possibility of the outbreak being one of cerebro-spinal fever. Many of the cases terminated without permanent paralysis or merely with inco-ordination. Both legs was the most common form of paralysis, with both arms and both legs next in frequency. The fatality was over 7·5 per cent. in upwards of two hundred cases, and was more severe towards the end, and affected older persons. The infection is traced in many cases, and the writer strongly advocates quarantining as the most important measure we have in protecting children from the disease during epidemics.

J. H. HARVEY PIRIE.

SOME ASPECTS OF POLIOMYELITIS. Sir WM. R. GOWERS, *Brit.*
(207) *Med. Journ.*, Feb. 5, 1910, p. 305.

WHAT disease causes the most numerous mistakes in diagnosis? Sir William Gowers thinks "Poliomyelitis" would not be far from the truth as an answer. One cause for this is—not ignorance—but the fact that the symptoms of the paralysis are so often preceded by others which resemble some general malady which is supposed to exist and to which the subsequent paralysis is supposed to be secondary. Another symptom causing error is the

great pain in the limbs often present in the early stages. Stress is laid on the fact that cases later in life seem to have become more frequent in recent years and that epidemics have become more marked. Several cases are briefly recorded, and the lecture ends with a consideration of recent investigations into the pathogenesis of the disease.

J. H. HARVEY PIRIE.

ACUTE POLIOMYELITIS. (Ueber Poliomyelitis acuta.) Professor (208) BENEKE, *Münch. med. Woch.*, Jan. 25, 1910, S. 176.

THE author brings out a few interesting points in connection with three rapidly fatal cases in children. Staphylococci were found in all three cords, a banality of no etiological significance. Emulsion of cord substance from one case was injected into rabbits, which all died; but, as Krause and Meinicke have recorded, without symptoms of poliomyelitis. In these the nervous system appeared practically normal; the chief feature seemed to be blood destruction, resulting in large accumulations of hæmosiderin in the spleen.

Some of Professor Römer's experimental poliomyelitis in monkeys was got by inoculation with material from these cases. One difference in the appearance of the monkey's cord is the very marked invasion of the ganglion cells by leucocytes, much more so than in man.

In the children's cords he found hyaline thrombi (agglutinated red cells) in the capillaries of the grey matter in non-hardened material. Wickman, who has also recorded this, looked upon them as a result of formalin fixation. The writer regards them as resulting from a blood stasis which probably plays a considerable part in the production of the oedema, softening and paralysis. He also notes the occurrence of typical fat-carrying granular cells in the anterior horns and vessel sheaths after four days. The small round-cell infiltration of the acute stage he regards as in no way derived from the neuroglia cells.

J. H. HARVEY PIRIE.

ACUTE POLIOMYELITIS, WITH AUTOPSY. COLIN K. RUSSEL, (209) *Montreal Med. Journ.*, Vol. xxxviii., Dec. 1909, p. 845.

THIS article is a preliminary report describing the clinical conditions and the pathological findings in two rapidly fatal cases of acute poliomyelitis which occurred in an epidemic during the summer and autumn of 1909. Clinically both were of the type of Landry's disease, and the direct cause of death in each was paralysis of the respiratory centres.

At autopsy there was marked oedema of the substance of the brain and cord. The latter had the appearance of having been

wound up carelessly, but tightly, with fine thread, showing everywhere little irregular ridges and bulges, evidently the swollen cord structure bulging through the meshes of the pial tissue.

Microscopically there was active congestion of the meninges and of the substance of the cord generally, not confined to the area of supply of the anterior spinal artery. There was the usual destruction of nerve cells. In one case cultures showed a diplococcus similar to that described by Geirsvold and others.

AUTHOR'S ABSTRACT.

ACUTE ANTERIOR POLIOMYELITIS WITH MENINGEAL RE-
(210) **ACTION. INVOLVEMENT OF THE FACIAL NERVE.** (Polio-
myélite antérieure aiguë avec réaction méningée. Participation
du facial.) R. AUGISTROU, *Journ. de Méd. de Bordeaux*, No. 7,
1910, p. 101.

A RECORD of a case in a boy, aged 5½ years, regarded by the writer as a sporadic example of epidemic poliomyelitis similar to those recently described by Netter, Nobécourt, and Guinon (*v. Review*, 1910, pp. 35, 108, 109). Paralysis of the right lower limb occurred on the third day of disease and right facial palsy on the fourth.

J. D. ROLLESTON.

EPIDEMIC POLIOMYELITIS IN MONKEYS—A MODE OF SPON-
(211) **TANEOUS INFECTION.** S. FLEXNER and P. A. LEWIS,
Journ. Amer. Med. Ass., Feb. 12, 1910, p. 535.

CONTINUING their observations on experimental poliomyelitis, the writers in this communication show that a path of elimination of the virus is by way of the naso-pharyngeal mucosa, and indicate that the same path may be traversed in the course of infection.

It would seem desirable, therefore, in dealing prophylactically with epidemics to destroy the secretions of the nasal and buccal cavities.

J. H. HARVEY PIRIE.

THE VIRUS OF ACUTE POLIOMYELITIS, WITH A COM-
(212) **MUNICATION ON THE QUESTION OF PROTECTIVE**
INOCULATION. (Ueber das Virus der Poliomyelitis acuta,
zugleich ein Beitrag zur Frage der Schutzimpfung.) R. KRAUS,
Wien. klin. Woch., Feb. 17, 1910, S. 233.

THE author first points out the resemblances between poliomyelitis and rabies in their lesions. The chief differences in the nature of their respective virus are: (1) that in the case of polio-

myelitis success has followed on attempts (by Flexner) to cultivate it in vitro; (2) that poliomyelitis is only typically transmissible to man and monkeys, unlike rabies, which affects many species of animals. The sole report (by Krause and Wernicke) of transmission to rabbits may, however, indicate an occasional abnormal transmissibility such as occurs with rabies in the case of pigeons.

The communication on protective inoculation, based on the fact that monkeys who have recovered from an attack of poliomyelitis are immune to a second inoculation, is to the effect that by means of one or two subcutaneous injections of the virus diluted with 0.5 per cent. carbolic acid monkeys acquire protection against a further subdural injection of concentrated virus.

J. H. HARVEY PIRIE.

CONTRIBUTION ON THE NATURE OF THE VIRUS OF
(213) **EPIDEMIC INFANTILE PARALYSIS.** (Beitrag zur Natur
des Virus der epidemischen Kinderlähmung.) RÖMER and
JOSEPH, *Münch. med. Woch.*, Feb. 15, 1910, S. 347.

THE point brought out in this short communication is the extraordinary power of resistance to glycerination which the virus of poliomyelitis possesses. Two months' preservation in pure glycerine seems to cause no falling off in virulence. It is another point of resemblance between this disease and rabies and chicken-cholera. This quality may be of service in experimental work, enabling one to keep material (the authors recommend 50 per cent. glycerine) until monkeys can be obtained.

J. H. HARVEY PIRIE.

A CASE OF SPINAL MENINGITIS RESEMBLING TUMOUR OF
(214) **SPINAL CORD; LAMINECTOMY; RECOVERY.** RICHARD
ROPER, *Lancet*, Feb. 19, 1910, p. 496.

A MAN, aged 41, was admitted to St Marylebone Infirmary in July 1909 with a nine months' history of pain in the arms which was becoming more severe. He had a well-marked scar on the glans penis. Three weeks after admission he was found to have weakness of both legs, a band of anæsthesia at level of 11th dorsal segment, increased knee jerks, double ankle clonus, double extensor plantar reflex with retention of urine. By Oct. 2nd pain was more severe, and in addition to signs mentioned, he had: complete paraplegia, almost complete loss of power in arms, anæsthesia to 3rd rib, brisk elbow and wrist jerks, absent abdominal reflexes, double incontinence and very small pupils. Diagnosis of tumour of cord was made on (1) early onset of pain, (2) sharp

definition of anæsthesia, (3) absence of improvement with potassium iodide and mercury. Oct. 6th, laminæ of 1st, 2nd, 3rd, and 4th dorsal vertebra removed. Only lesion found was adhesion between dura mater and pia arachnoid. There was immediate relief of pain. Oct. 27th, power in legs returning; sensation normal from umbilicus upwards; complete control of bladder sphincter. There was leakage of cerebro-spinal fluid from wound for three weeks. After operation, 100 grains of arsacetin were given in 10-grain doses into muscle on alternate days. In Feb. 1910 patient was able to walk without assistance, he had complete control of sphincters, and sensation was normal except for impairment in patches in legs, plantar reflexes remained extensor; pupils were normal in size and reacted normally.

AUTHOR'S ABSTRACT.

CASE OF TRANSVERSE LESION OF THE SPINAL CORD IN
(215) **THE LOWER CERVICAL REGION.** SEWELL and TURNBULL,
Proc. Roy. Soc. Med., Vol. iii., Jan. 1910 (Pathological Section),
p. 61.

THE case was one of fracture-dislocation at the level of the fifth cervical segment. The patient survived for eight weeks. The spinal cord and brain were examined by the Marchi method, and the cerebral cortex by Nissl's method. In the spinal cord the usual degenerations, ascending and descending, were found, and no new facts are elicited. The writers state that Gowers's tract sends fibres to Deiter's nucleus. The bibliographical references are somewhat meagre.

PURVES STEWART.

TYPE AND DISTRIBUTION OF SENSORY DISTURBANCES DUE
(216) **TO CEREBRAL LESION.** C. D. CAMP, *Journ. of Nerv. and*
Ment. Dis., Jan. 1910, p. 17.

THE case is described of a man, aged 40, who suffered from left hemiplegia, after an accident to the right side of the head. There was total hypæsthesia on the left side, with anæsthesia of the hand and wrist. On this side also tactile discrimination was impaired, as was the capacity to localise stimuli. No conclusions are drawn by the author, and no operation or autopsy was performed.

ERNEST JONES.

MENINGISM: A CONSIDERATION OF THE SYNDROME OF
(217) **DUPRÉ.** LANGLEY PORTER, *Arch. of Pediat.*, Vol. xxvii., 1910,
p. 9.

DUPRÉ in 1894 coined the word meningism to describe a clinical picture like true meningitis, but without demonstrable pathological

lesions of the meninges, and which tends to rapid recovery when the patient is relieved of the toxæmia which is usually the cause of the condition. Lumbar puncture may give great help in making a differential diagnosis. In meningism the fluid is clear, and contains only a trace of albumen; it has the normal reducing power with Fehling's solution; it flows without evidence of increased pressure, it contains no organisms, and no growth occurs on media. Meningism occurs in pneumonia, typhoid fever, rheumatism, malaria, diphtheria, and the exanthemata.

As to treatment, the author has found that subcutaneous injection of normal salt solution tends to bring about a rapid amelioration of the symptoms.

Notes are given of six cases observed by the author, two occurring in the course of typhoid fever, one in a case of bronchopneumonia, one apparently due to an error of diet, in one there was a suspicion of syphilis, and finally there was one case of tuberculosis of the lungs, which developed symptoms of meningitis, and died, but no pathological changes could be detected in the meninges.

W. G. PORTER.

TWO CASES OF TUMOUR OF THE PONS. P. ZENNER, *Journ. of (218) Nerv. and Ment. Dis.*, Jan. 1910, p. 26.

THE first of these occurred in a boy aged 5, who for five months before death had suffered from headache. Paralysis of the left abducens appeared early, and was followed by a right-sided hemiparesis (with Babinski's sign) and optic neuritis. The child died a few minutes after the operation was ended. A rapidly growing glioma was found.

The second case was that of a man aged 20, whose illness began with diplopia, due to weakness of the left abducens. There was a slight hemiparesis on the right side. The whole illness lasted only a couple of months. No post-mortem examination could be made. The discs were throughout normal.

ERNEST JONES.

PERIOSTEAL CYST FORMATION. E. W. TAYLOR, *Journ. of Nerv. (219) and Ment. Dis.*, Jan. 1910, p. 99.

TAYLOR here reports an unusual case in a man, aged 35, who, after suffering for three years from epilepsy, with, later, optic neuritis, was operated on over the left arm area. He was greatly relieved, but developed motor aphasia, and died six months later. At the autopsy a large cyst was found at the seat of operation, no doubt produced through the raised intra-cranial pressure. Broca's area, the lenticular zone and the temporal convolutions were quite

intact. The author makes some interesting comments on this fact, as well as on the clinical and surgical aspects on the case.

ERNEST JONES.

THE DIFFERENTIAL DIAGNOSIS OF PARAPLEGIA. ERNEST
(220) JONES, *Canadian Pract. and Rev.*, Jan. 1910, p. 1.

A REVIEW is given of this subject, two cases being employed to illustrate the various points considered. One was a case of infective focal myelitis in a young boy, the other one of hysterical paraplegia in a young woman. In the latter no reflexes could be obtained (during two months' observation), sensory loss was practically absolute, and repeated attacks of retention of urine had occurred; rapid improvement had taken place under treatment.

AUTHOR'S ABSTRACT.

A CASE OF PURE WORD-DEAFNESS, WITH AUTOPSY. A. A.
(221) BARRETT, *Journ. of Nerv. and Ment. Dis.*, Jan. 1910, p. 73.

THIS excellently studied and described case was one of "subcortical auditory aphasia" in Wernicke's sense. The most interesting feature of the post-mortem examination was that, though a considerable area of cortex was destroyed in the first and second temporal convolutions, the transverse convolutions on the dorsal surface of the temporal lobe were quite intact. This area the author agrees with Von Mayendorf in regarding as the receiving station for the auditory radiations, so that he concludes that the pure word-deafness was the result of the isolation of it from the internal geniculate body, *i.e.* of a "subcortical" lesion as postulated by Wernicke.

ERNEST JONES.

**CHRONIC ORGANIC AFFECTIONS OF THE BRAIN AND SPINAL
(222) CORD AFTER TRAUMA.** (Chronisch-organische Hirn- und
Rückenmarks-affectionen nach Trauma.) SCHULTZE, *Deutsche
Zeitsch. f. Nervenheilk.*, Bd. 38, 1910, S. 238.

THE term Trauma is not limited to somatic injuries, but also includes psychical shocks, *e.g.* by fright or anxiety. The exact manner in which a psychical trauma, such as sudden threatening of death, operates on the nervous system, is not understood. Possibly there may be a sudden cerebral anæmia analogous to the pallor of the face, whether this anæmia be due to sudden failure of the heart or to vasomotor constriction in the cerebral circulation. Another hypothesis is that emotional stimuli may produce a direct physical or chemical change in certain nerve-cells or neurones, whereby certain disturbances are caused, transient in

some people, permanent and progressive in others. It must, however, be borne in mind that comparatively few patients with heart disease or vasomotor disorders suffer from chronic brain or spinal cord affections. Psychical stimuli, therefore, by themselves must be reckoned as unlikely to induce organic nervous maladies, though we must admit the possibility of emotion as an exciting factor of organic nervous diseases in patients with preceding cardio-vascular disease. Strictly speaking, it would be more accurate to regard them rather as examples of exaggerations or culminations of pre-existing chronic maladies.

A further question is as to the rôle played by peripheral trauma, especially neuritis, in the etiology of chronic diseases of the central nervous system. Suppurative conditions in any part of the body may induce abscess in the brain or spinal cord, or chronic meningitis. The extent to which traumatic ascending neuritis may spread up to the spinal cord and brain and induce a degenerative disease like tabes, or a chronic inflammatory process like a myelitis or a syringomyelia, is still much disputed. In this connection we must distinguish between a paraneuritis, in which the organism or its toxins is carried upwards along the lymphatic paths of the nerve-sheaths, a perineuritis, in which the interstitial tissue of the nerve-trunk is actually inflamed, and a neuritis proper, where the inflammatory or degenerative process attacks the nerve fibres themselves, as in poisoning by lead, alcohol, or arsenic.

Most cases of central nervous disease following trauma are apparently the result of direct mechanical injury producing hæmorrhages or other vascular changes, or even areas of necrosis, or forming the starting-point of progressive disease. As regards tabes, in spite of the various cases recorded in literature as having followed trauma, Schultze is not convinced that trauma alone can induce the disease, though it may intensify or render evident a previously latent case. In view of the 100 per cent. of positive reactions to the Wassermann test (Nonne) in cases of general paralysis, it is unnecessary to invoke trauma as the primary etiological factor in this disease. The relation of disseminated sclerosis to trauma is much more difficult of determination. Out of 167 cases in Schultze's clinic, only fifteen gave a history of trauma. In none of these had the patient been carefully examined previous to the trauma, so that one cannot be sure as to the absence of initial symptoms; nor in the literature has any conclusive case been recorded.

On the other hand, it is beyond doubt that mechanical trauma can induce chronic myelitis. This has been shown experimentally by Schmaus and others, and confirmed by observations in man.

With regard to syringomyelia and syringobulbia, Kienböck,

who collected and reviewed the subject in 1902, came to the conclusion that no conclusive case of traumatic syringomyelia had been established. Schultze, however, is inclined to be less dogmatic on this point, and to admit the possibility of a primarily traumatic syringomyelia. He instances the rarity of the disease in the non-labouring classes.

As regards the brain and its membranes, it is well recognised that trauma may produce chronic pachy- and lepto-meningitis, especially pachy-meningitis in alcoholic patients and tuberculous meningitis in certain children. There is also the chronic serous meningitis of Quinke and chronic hydrocephalus, both of which appear in some cases to follow injuries.

The relation of cerebral arterio-sclerosis to trauma is obscure, especially in view of the important rôle played by other factors, such as syphilis, alcohol, and other intoxications. Doubtless trauma may render the cerebral vessels more vulnerable to various infective processes; moreover, trauma may suddenly produce damage by raising the blood-pressure.

Cerebral abscesses, apart from those due to direct infection from without, may also result from trauma by a process of lowered resistance to a circulating infection. Similarly in parasitic cysts and tuberculous tumours, but in the case of true neoplasms the influence of trauma is far from soundly established.

In the discussion in the foregoing paper, Nonne related two cases—one of tabes and one of syringomyelia following trauma—in neither of which was there any evidence of syphilis (negative Wassermann reaction) or of other adequate cause. Niessl related a case of traumatic tabes in a non-syphilitic patient, and Rothmann a case of syringomyelia following a fall. PURVES STEWART.

THE NERVOUS COMPLICATIONS OF WHOOPING-COUGH.

(223) (*Ueber die nervösen Complicationen des Keuchhustens.*) G. ARNHEIM, *Archiv f. Kinderheilk.*, Bd. l., 1909, p. 324.

ARNHEIM examined the brains of fifteen fatal cases of pertussis and also the brains of animals who had been injected with the Bordet-Gengou whooping-cough bacillus. He found that the nervous complications of whooping-cough are rarely due to large hæmorrhages, and considers that they are usually due to a toxic process. Neither the naked eye nor microscopical appearances are characteristic, but the changes met with are those common to many infectious diseases, especially influenza. It is not easy to determine whether the convulsions of whooping-cough are due to serous meningitis, suppurative meningitis, or encephalitis. Probably there is only a difference of degree between these processes.

J. D. ROLLESTON.

EPILEPSY IN ITS RELATION TO MENSTRUAL PERIODS.(224) ALFRED GORDON, *N.Y. Med. Journ.*, Oct. 16, 1909.

THE author has had twenty-three cases in whom the seizures coincided with the periods of menstruation. These patients were totally free from attacks in the intervals between the menses, but at the first appearance of menstruation (five cases), or during the course (two cases), or at the termination (two cases), or preceding the onset (fourteen cases), the convulsions made their appearance. The fits were absolutely typical. In only five of the cases were there any dysmenorrhœic symptoms; the author concludes that probably a diseased condition of the ovaries bears little relation to the epileptic seizures.

Every one of the twenty-three patients was treated with thyroid extract between the menstrual periods, and bromides for a few days immediately preceding the onset of menstruation. A salt-free diet was also given. The results from this treatment are held to have been very satisfactory.

D. K. HENDERSON.

HYSTERICAL PEMPHIGUS. (Contribution à l'étude du pemphigus (225) hystérique.) J. RICARD, *Thèses de Paris*, 1909-10, No. 35.

RICARD has collected thirty-two cases from literature. In twenty-one simulation was proved, in five it was possible, and the descriptions of the remainder were too lacking in detail to be of scientific value. He concludes that at present the reality of hysterical pemphigus as a morbid entity has not been established (*cf. Review*, 1908, p. 426, and 1909, p. 47).

J. D. ROLLESTON.

THE INFLUENCE OF GRAVES' DISEASE AND KINDRED CONDITIONS ON THE STATURE, WITH A REPORT ON SOME LAWS OF OSSIFICATION.

(226) **CONDITIONS ON THE STATURE, WITH A REPORT ON SOME LAWS OF OSSIFICATION.** (Ueber den Einfluss der Basedowschen Krankheit und verwandter Zustände auf das Längenwachstum nebst einigen Gesetzen der Ossifikation.) I. HOLMGREN (Stockholm). 244 pp. Leipzig: Nordiska Bokhandeln, Stockholm, 1909. Also, *Nord. Med. Arkiv*, Afd. 11, H. 2, 1909-10.

ON the basis of 127 cases that have come under his own observation, the author has been led to the conclusion that individuals who, while still growing, are affected with Graves' disease even in its incomplete forms—goitre, combined with tachycardia—are, in the majority of cases, 85 per cent., of more than average height, whereas that does not prove to be the case with those that develop symptoms of the disease after they have reached their limit of growth; nor is it so with goitrous persons, either older or younger,

who are not tachycardiac. The girls who had goitre and tachycardia were even found, in most cases, to be taller than their relatives of the same sex. Furthermore, on collating the statistics of the stature of children suffering from Graves' disease, which are to be found in sundry places in medical literature, the author found his results corroborated. He considers the most likely explanation of the circumstance to be that hyperthyreosis induces an increase of the stature. As hyperthyreosis is reported to be common among goitrous patients in countries where goitre is endemic, it might be expected that in those countries there would be found, besides an abnormally large number of people of very small stature—cretinism, etc.—an unusually large number also of people of tall stature. From an analysis of Livi's tables of the stature of conscript soldiers in the goitrous districts of North Italy, the author shows that this is really the case, and that the percentage both of unusually short and unusually tall persons varies directly with the degree to which the particular district is subject to goitre. He also points out that the age of puberty, during which the activity of the thyroid gland is on good grounds supposed to be increased, is a time of life at which growth is fast. The author considers that girls who, at the age of puberty, display symptoms of hyperthyreosis form a special clinical type, the characteristics of which are physical and psychical precocity; conditions, that is to say, the opposite of those prevailing in diseases where the activity of the thyroid gland is diminished. He regards the conditions prevailing in hyperthyreosis as constituting a support for the opinion that the increase of stature is physiologically regulated by the activity of the thyroid gland. The results of a study of the ossification of the skeleton of the hand in 113 Röntgen photograms of the same number of individuals go to show the same thing. There exists a fixed relationship between the degree of ossification and length of body, the shortest individual in each year's group being likewise the least advanced in respect of ossification, whereas the tallest is the most advanced. The short-statured, consequently, do not attain full growth until later in life than the tall-statured. The corresponding phenomena in myxœdemic patients are merely an extreme case, belonging to the department of pathology, of a general physiological law respecting the dependence upon the thyroid gland of both the increase of stature and ossification. It is, moreover, worthy of note, as illustrating the significance the thyroid gland has for the stature, that the occurrence of Graves' disease is more frequent among the tall Anglo-Saxon and Teutonic races than elsewhere.

The author points out that the principal growth, both of children and plants, takes place in the spring and summer months;

he regards it as probable that the radiant energy of the sun provides an impulse towards growth in the case of children as in the vegetable world. The thyroid gland, owing to its localisation in the body, is peculiarly liable to experience the effect of that influence. It is the only vital organ that lies close to the surface without the protection of any bone. The author has observed that the exposed position of the thyroid gland in the throat is more characteristic of individuals in the growing period of life than later on, inasmuch as from the close of the age of puberty onwards it gradually sinks lower down towards the upper chest aperture, and so becomes sheltered by the manubrium—habitual thyreoptosis.

The author regards it as established that infectious diseases may give rise to Graves' disease, perhaps through the agency of thyroiditis as a connecting link, and thence draws the conclusion, based upon his own investigations, that infective diseases may cause an increase of stature. The time-honoured observation that young people during or immediately after an infective disease have been known not unfrequently to grow very noticeably, may be explainable in this way. Seeing that it has been shown by a number of investigations, carried out recently, that a slight irritation of the thyroid gland is very frequently to be observed in cases of infective diseases, even when no actual thyroiditis or Graves' disease ensues, it does not seem unlikely that infective diseases play a larger part in determining tallness of stature than we are at present aware of. The author points out, too, that there are other glands with internal secretion besides the thyroid one, that probably have to do with the regulation of growth.

Several other of the author's results, which may be looked upon as by-products of his preliminary investigations, possess a certain interest, *e.g.* a palpation method that renders it possible in the majority of cases to palpate the lateral lobes of the thyroid gland, when of the normal size; investigations respecting the height of poorer class children in Stockholm, the results of which go to show that they are now about commensurable with the children of the well-to-do classes in the eighties of last century; the establishment of a strictly regular sequence in the synostosis of the epiphyseal cartilages of the hand. Into these matters, however, a brief report like the present cannot enter.

AUTHOR'S ABSTRACT.

THE SO-CALLED THYMUS DEATH. J. P. CROZER GRIFFITH.
(227) *N.Y. Med. Journ.*, Sept. 4, 1909.

SEVEN cases of sudden death in one family are recorded. These seven all died between the ages of one month and eight months,

all well nourished, with uncertain diagnoses, and all with clinical histories nearly identical, namely, slight bronchitis, followed in one instance by extremely sudden death; in the remainder by the rapid development of cyanosis, and dyspnoea lasting some hours or a day, but without any symptoms suggesting stenosis. An autopsy was performed in one case, and a very large thymus gland was found. It is a supposition only, but a warrantable one, that, with the clinical symptoms the same, and in view of the family relationship, the lesions in the other children were the same as in the one on whom the autopsy was performed. There was no evidence in any of these cases to support the theory that tracheal compression was the cause of death.

The various theories in regard to the cause of death in cases of thymus enlargement are fully discussed. D. K. HENDERSON.

THE DIAGNOSTIC SIGNIFICANCE OF TENDON AND SKIN

(228) **REFLEXES IN URÆMIA.** (Über die diagnostische Bedeutung der Sehnen- und Hautreflexe bei Urämie.) H. FETTE, *Berl. klin. Woch.*, 1910, p. 100.

CURSCHMANN'S recent communication (*v. Review*, 1909, p. 783) induced Fette to investigate the reflexes in eleven cases of nephritis, five of which are recorded in the present paper. The examination was made before and during a uræmic attack. He found that exaggeration of the reflexes as manifested by ankle clonus and positive Babinski and Oppenheim was by no means invariable, and that therefore the condition of the reflexes did not possess the diagnostic and prognostic value attributed to them by Curschmann.

J. D. ROLLESTON.

THE REFLEXES IN HYSTERIA. P. C. KNAPP, *Journ. of Nerv. and (229) Ment. Dis.*, Jan. 1910, p. 93.

AFTER making some forcible criticism of Babinski's conception of hysteria, the author details the results of a study of the reflexes in a hundred undoubted cases. He found exaggeration of the knee jerks in eighty-six, and asymmetry of them in thirty-seven; the ankle jerks were asymmetrical in thirty. The plantar reflex was quite absent in two cases; it was diminished or absent on the anæsthetic side in forty-seven. The author thus decisively contradicts Babinski's statement that the reflexes are never altered in hysteria.

ERNEST JONES.

CLINICAL VARIETIES OF PERIODIC DRINKING. PEARCE (230) BAILEY, *Med. Record*, Oct. 30, 1909.

THIS variety of inebriety, on account of its periodic character, has long been compared with another paroxysmal disease—epilepsy.

There are certain general similarities between these two diseases, and, in addition, in both there is premonitory depression and retrograde amnesia. The writer, however, believes that many of the so-called epileptic dipsomanias can be better explained on some other hypothesis; what seem at first sight epileptic explosions can frequently be reduced to certain phases of mental disease, the clinical characteristics of which soon become blurred by alcohol, or to the influence of some recurring psychic motive.

He draws attention to the common occurrence of sudden attacks of sexual excitement in periodic drinkers, and emphasises the importance of paying attention to the hypothesis that some cases of dipsomania arise in the sexual centres rather than in the motor cortex, and that they are part of a general neuropathic state, are psychogenetic in origin, and have no direct relationship to epilepsy.

D. K. HENDERSON.

HEAD NYSTAGMUS. (*Kopfnystagmus.*) E. URBANTSCHITSCH, (231) *Monatsschr. f. Ohrenheilk.*, Bd. 44, H. 1.

THE vestibular apparatus is connected through Deiters' nucleus with—(1) The nuclei of the ocular muscles by the posterior longitudinal fasciculus (vestibulo-nuclear tract); (2) the cerebellum by the corpus restiforme (vestibulo-cerebellar tract); (3) the cervical spinal cord—anterior cornu (vestibulo-spinal tract). Observations on the vestibulo-nuclear and vestibulo-cerebellar tracts have hitherto been made almost exclusively on the human subject, whereas the vestibulo-spinal route has been investigated in animals only. Ewald has shown that the tonus of the muscles of the body depends on the labyrinth. When one labyrinth is affected, the tonus of the muscles related to it is altered so that they do not contract in the same manner as their opponents. Turning movements of the head are thus produced, and, as in eye-nystagmus in man, these are made up of a slow vestibular and a rapid cerebral component. Flourens has given the name "Head-Nystagmus" to this condition, which has not hitherto been observed in man. The explanation is as follows: In man the eyes are freely movable and vision is binocular; in birds vision is monocular and the eyes are less freely movable, and therefore birds use their head muscles more than men do. According to Urbantschitsch's experiments, guinea-pigs and rabbits have not got binocular vision, and therefore exhibit head nystagmus; whereas dogs and monkeys have binocular vision, and show rudimentary eye-nystagmus. The author records a case of head-nystagmus in a patient who had had the radical mastoid operation performed for chronic middle-ear suppuration. A fistula was present in the horizontal canal, and during healing a cyst formed in this position; the vestibular apparatus remained

excitable. Pressure on the cyst caused rotary and horizontal eye-nystagmus to the same side, and also pendulum movements of the head from side to side. Two other cases are recorded, but are less convincing. Of late Urbantschitsch has experimentally produced labyrinthine torticollis. He bandaged the patient's eyes, and directed her to hold the head in the median position while the labyrinthine wall was gradually cooled down by cold lotion. In two minutes a gradual turning of the head occurred towards the diseased side; the patient was not aware of this movement, and when the head was readjusted the torticollis again appeared. Frey has investigated the vestibulo-spinal tract in deaf mutes with negative results, but Urbantschitsch points out that these patients had old bilateral labyrinth disease, and that nature had established compensation.

J. S. FRASER.

**THE DIAGNOSTIC VALUE AND THEORETIC EXPLANATION
(232) OF NYSTAGMUS PRODUCED BY RAPID HEAD MOVEMENTS.** BÁRÁNY, *Wien. med. Wchnschr.*, Nr. 4, 1910, S. 210.

IN 1906 Bárány described a form of nystagmus occurring in certain cases of recent acute labyrinthine disease and circumscribed affection of the vestibular apparatus. On suddenly turning or nodding the head laterally or anteroposteriorly rotary nystagmus lasting about half a minute and associated with faintness occurs. The direction of the nystagmus usually corresponds with that of the head movement, and an interval of rest is required in most cases before it can be produced a second time. The presence of the nystagmus and its amount and direction have a diagnostic value in verifying statements of the patient and in indicating the side of the lesion, more nystagmus being produced by nodding the head towards the affected side.

The author's explanation of the phenomenon is that normally the movement of the head produces a nystagmus to that side. The cessation of movement produces a contrary nystagmus, and thus the eye becomes still. In a diseased condition of the vestibular apparatus this latter correcting movement is absent. A rest is required before the nystagmus can be produced again, because the centre for causing it is exhausted.

H. M. TRAQUAIR.

LABYRINTH AND NYSTAGMUS. (*Labyrinth und Nystagmus.*)
(233) SUGAR, *Archiv f. Ohrenheilk.*, Bd. 81, Heft 1 and 2.

THIS paper is merely another German, or rather Austro-Hungarian, Prioritätstreit: it has been written to establish the claim of the Hungarian—Andreas Högyes—to be the first to point out the

connection between the labyrinth and movements of the eyes. Bárány, in his classical work on the "Physiology and Pathology of the Semicircular Canal Apparatus" (*Review of Neurology*, April 1909, p. 295), had overlooked Högyes' writings, and Sugar, as a Hungarian, is justly indignant. The truth of the matter is, that in 1880, when Högyes published his work, otologists were not ready to apply it to the surgery of the ear—operations on the inner ear were not thought of—but when Bárány in 1907 stated precisely the same facts, aural surgeons were able to profit by them. Sugar points out that an analogy is to be found in Helmholtz' invention of the ophthalmoscope following on V. Brücke's discovery of the illumination of the eye. Högyes seems to have found out practically all the important facts that have since been rediscovered, *e.g.* nystagmus due to rotation; the connection between the eye-muscles and the labyrinth; the absence of compensatory eye-movements after destruction of the labyrinths; the effects of pressure applied to the fenestra oralis; the result of stimulation of the utriculus and ampullæ of the superior vertical and of the horizontal canals.

Along with his assistant, Marikowsky, Högyes investigated the influence of the membranous labyrinth on bilateral associated body movements, and found that the abductors, extensors, and pronators are in connection with the labyrinth of the same side, whereas the adductors, flexors, and supinators are related to that of the other side; they also ascertained that the reflex irritability to faradic currents is diminished in the extremities of pigeons and dogs after destruction of the labyrinths.

Högyes further discovered that nystagmus could be produced by injury of the mid-brain after the labyrinths had been destroyed. Even the "after-nystagmus" which occurs on suddenly stopping the rotation of a normal individual, and the so-called "fistula symptom," were not overlooked by Högyes.

Sugar also discredits Bárány's discovery of "caloric nystagmus," and points out that Urbantschitsch in 1896 had attributed this phenomenon to the reflex action of the labyrinth. It is only fair to state that Bárány did not claim complete originality for his work, and that he gives numerous references to the literature of the vestibular apparatus.

J. S. FRASER.

PSYCHIATRY.

A STUDY OF THE MORO-TUBERCULIN OINTMENT TEST, WITH (234) SPECIAL REFERENCE TO ITS USE IN THE INSANE.

L. A. LANE, *Amer. Journ. of Insanity*, Jan. 1910, p. 477.

A REVIEW is given of this subject, and an account of a hundred cases investigated by the test. The writer considers that the test

is one of considerable value, and that negative findings are of more significance than positive ones. ERNEST JONES.

ON THE DELIMITATION OF MANIC-DEPRESSIVE INSANITY.

(235) (*Über die Umgrenzung des manisch-depressiven Irreseins.*)

O. BUMKE (of Freiburg), *Zentralbl. f. Nervenhk. u. Psychiat.*,
Nr. 287, June 1909.

THE Kraepelinian school has steadily progressed in the direction of dividing the great majority of all so-called functional psychoses into two great groups—manic-depressive insanity on the one hand, dementia præcox on the other. The wider each group has become, the more vague of necessity is the resulting conception of the disorder. The general views on the symptomatology and the prognosis of manic-depressive insanity have been modified; thus it is recognised that catatonic symptoms may arise in this disorder; as to the prognosis, a certain degree of mental reduction, and not complete recovery, is the outcome in some cases. The conception of the disease has been extended to embrace not only well-marked depressions and excitements, but cyclothymic variations of mood, and even the periodicity seen in the life of a Goethe; the term periodicity has come to be used in an extremely vague sense. The symptom of blocking of thought and action has been given almost pathognomonic value even in its most dilute form. The boundaries separating manic-depressive insanity from other manifestations of the psychopathic constitution and from acquired neurasthenia are tending to disappear. Dreyfus, in his monograph on the melancholia of the involution period, sweeps it into the manic-depressive group, notwithstanding its characteristic symptomatology and course; the positive criteria of the disorder are thus reduced to periodicity and an anomaly of mood with blocking or with agitation. On the other hand, Specht emphasises the fact that paranoia frequently runs an episodic course, that it may be cured, or at least may cease to give active manifestations, that the most typical paranoiacs, the litigious insane, frequently show certain manic symptoms; there are transition forms between chronic mania and paranoia of the litigious type. The one feature common to the various groups mentioned above is that they represent, only in exaggerated forms, tendencies present in normal mental life; this is the feature common to the endogenous or functional psychoses. The fact that these groups have many transition forms, due to the common basis upon which they arise, is no reason for giving up our clinical differentiations. The tendency in this direction has been too marked; more attention should now be given to the individual groups, cyclothymia, mania, melancholia, true circular psychoses. The author draws an absolute line of

demarcation between manic-depressive insanity and dementia præcox, and considers that, as to a psychological interpretation of the disorder, dementia præcox is in the same category as general paralysis. This limitation of the author's view does not, however, affect the discussion of his special topic.

C. MACFIE CAMPBELL.

THE AFFECTIVE PSYCHOSES IN CHILDHOOD, ESPECIALLY

(236) **THE MILDER FORMS.** (*Zur Kenntnis der affectiven Psychosen des Kindesalters, insbesondere der milderer Formen.*)

M. FRIEDMANN (of Mannheim), *Monatsschr. f. Psych. u. Neur.*, July 1909.

THE author discusses the general topic, and gives brief summaries of ten cases. The following are his conclusions:—(1) In children periodic insanity with an atypical course is not very rare, with a large series of rather short attacks of excitement or depression separated by relatively short clear intervals. (2) More common are atypical disorders of mood, occurring in children of neurotic disposition, elicited by sudden emotional occurrences; they are transitory, and do not seem to have a detrimental effect on the later mental life of the individual. Such disorders are not to be grouped with actual psychoses. (3) Mild attacks of melancholia and mania occur, which may be the forerunners of attacks in later life; these attacks are usually elicited by special exciting causes.

C. MACFIE CAMPBELL.

A STUDY OF ERRORS IN THE DIAGNOSIS OF GENERAL

(237) **PARESIS.** E. E. SOUTHARD, *Journ. of Nerv. and Ment. Dis.*, Jan. 1910, p. 1.

THIS valuable paper is based on the following material:—In four years 247 autopsies were performed at Danvers Asylum. In 61 of the cases, 25 per cent., the clinical diagnosis of general paralysis had been made; in 41 of these the diagnosis was regarded as quite certain, in 7 as probable, and in 13 as doubtful. Of the 41 certain cases the diagnosis was verified after death in 35, of the 7 probable ones it was verified in 2, and of the 13 doubtful ones it was verified in 6; two other cases were found post-mortem where the disease had not been suspected. In other words, the clinical diagnosis was confirmed in 70 per cent. of the cases; in the clinically "certain" group it was confirmed in 85 per cent. The mistakes in the last-named group concerned six cases, which were cases of luetic subcortical encephalitis, tabes combined with non-luetic cerebral disease (2), arterio-sclerosis with severe cerebellar involvement (2), and cerebral sclerosis. These are fully described, and the sources of the error carefully considered. ERNEST JONES.

THE CYCLIC FORMS OF DEMENTIA PRÆCOX. W. R. DUNTON,
(238) *Amer. Journ. of Insanity*, Jan. 1910, p. 465.

THIS article is an attempt to separate a special form from dementia præcox allied to the *folie circulaire* of the French. It is an intermediate link between dementia præcox and manic-depressive insanity. It is characterised by the occurrence of attacks of excitement and stupor, but stereotypies are present, and there is no true flight of ideas. The intellectual deterioration is slight. Muscular rigidity, *flexibilitas cerea*, or *hypertonus* occurs, and the motor restlessness may be slight. ERNEST JONES.

CLINICAL CONTRIBUTIONS ON MELANCHOLIA. (Klinische
(239) *Beiträge zur Melancholie-Frage*.) H. BERGER (of Jena),
Monatsschr. f. Psych. u. Neur., Aug. 1909.

A STATISTICAL investigation on the basis of the cases diagnosed of melancholia in the Jena clinic during a period of twelve years; the points referred to are ætiology, precipitating cause, symptomatology, nature of suicidal attempts, duration of the disease, recurrence of the attacks. C. MACFIE CAMPBELL.

ON HALLUCINATORY MEMORIES. (Über halluzinatorische Erin-
(240) *nerungen*.) W. v. BECHTEREW (of St Petersburg), *Zentralbl. f.*
Nervenhk. u. Psychiat., June 1909, Nr. 288.

THE author gives brief notes on several patients who presented the symptom of a hallucinatory reproduction of previous experiences; the hallucinations may be of visual or auditory nature. The symptom has its prototype in the dream-reproductions of actual experiences; the author has observed it in cases of the most varied nature, *e.g.* hysteria, epilepsy, chronic alcoholism, organic brain disease. C. MACFIE CAMPBELL.

TREATMENT.

ON "NIL NOCERE" IN NEUROLOGY. (Zum Nil nocere in der
(241) *Neurologie*.) OPPENHEIM, *Berl. klin. Wchnschr.*, Jan. 31, 1910,
S. 198.

THE writer enters an urgent plea that in the treatment of nervous diseases the physician if he fails to do good should at least be most careful that no harm results from his interference. Passing over with a brief reference such curative measures as hydrotherapy, electrotherapy, massage, gymnastics, etc., which can readily be graduated and watched so as to do no harm, he deals first with the

question of surgery. He quotes the statement of a celebrated surgeon: "We are entitled to make a diagnostic incision in the skull and expose the brain just as we have long had no fear to make a diagnostic laparotomy; we need have no reflections when we sometimes find nothing, the danger of the operation is small." But he points out this essential difference, that the functions of speech, sight, thought concern not the abdomen but the brain, and shows that prolapse of the brain may be a very serious thing. Lumbar puncture he regards as being far from the trivial and harmless procedure that most people consider it, and he gives several cases in which optic atrophy, monoplegia, complete paraplegia or optic neuritis followed upon a diagnostic puncture. He therefore warns young practitioners especially not to treat it as trivial.

The injection of alcohol for neuralgia he also has found to cause paresis of face or limb.

But it is on the subject of using new drugs like atoxyl and arsacetin that he chiefly asks for caution. He records several cases of blindness due to the use of these, and suggests that, as precautions, all new poisonous drugs should be carefully tested on animals, then that they should not be given at all in trivial cases, and in serious cases only with the most careful observation, and, finally, that the medical journals should prepare a kind of black list in which all bad effects of new drugs should be registered.

JOHN D. COMRIE.

**A CRITICISM OF ARSACETIN (EHRlich) AND ITS EFFECT
(242) UPON THE OPTIC NERVE. (Zur Beurtheilung des Arsacetins
(Ehrlich) und seiner Einwirkung auf den Sehnerven.) HAMMER,
D. med. Wochenschr., Feb. 10, 1910, No. 6, p. 267.**

THE author adds another to the few cases yet recorded in which arylarsonates other than atoxyl have led to blindness. His patient was a feeble, broken-down man of 66, suffering from bronchiectasis and severe anæmia. After a month of other treatment he was given eight injections of 0.1 gram each of arsacetin, spread over sixteen days. Three days after the last injection the discs were found to be pale and the retinal vessels diminished: appearances had been normal six weeks earlier. His sight failed rapidly, and was gone nine days after the last injection. A few days later he died, apparently from asthenia; but no sectio was permitted.

The most striking feature of the case is the comparatively small amount of the drug (12 grains) which had been administered. Though the patient was very feeble and ill, there was no reason to suppose that his nervous system was otherwise abnormal; and

there was, as usual, no warning of coming disaster till it was too late to avert it. None of the arylarsonates as yet employed is free from this very insidious and very terrible risk. Five other cases following the use of arsacetin are referred to by the author.

R. A. LUNDIE.

MENTAL HEALING IN AMERICA. WOODBRIDGE RILEY, *Amer. (243) Journ. of Insanity*, Jan. 1910, p. 351.

RILEY gives here an interesting historical review of this subject, as also of that of psychotherapy in America.

ERNEST JONES.

THE TREATMENT OF HYDROCEPHALUS BY REPEATED (244) CEREBRAL PUNCTURE. W. KANSCH, *Mitt. a. d. Grenzgeb. der Med. u. Chir.*, Bd. 21, H. 2.

THE writer discusses the methods of treatment which have been used in cases of hydrocephalus, and in particular that of repeated puncture of the lateral ventricles through the anterior fontanelle. He records in great detail two cases so treated in which distinct improvement followed the withdrawal of large quantities of cerebro-spinal fluid in this way.

The procedure recommended is as follows :

1. Thorough cleansing of the scalp.
2. Puncture of lateral ventricle through the anterior fontanelle with a hollow needle.
3. Withdrawal of fluid until the intra-cerebral pressure has fallen to -5 mm. mercury, which figure must be regarded as the limit of safety.
4. Application of a firm bandage to the head in order to mould the cranial bones.

After several punctures the fluid accumulated much more slowly than formerly, probably owing to the fact that the reduction of intra-cranial pressure has opened up many of the natural channels of absorption which had previously been compressed by the high intra-cranial tension.

D. P. D. WILKIE.

AN OPERATION FOR PARALYTIC SHOULDER DUE TO IN- (245) FANTILE PARALYSIS. O. KILIANI, *Annals of Surg.*, Jan. 1910.

THE case operated on was that of a girl of 16, who nine years before acquired, as the result of acute poliomyelitis, complete paralysis of the muscles of the shoulder and upper arm. Previous to the operation she could not move the arm from the side, and

there was found to be complete atrophy of the deltoid, biceps, triceps, brachialis anticus, coraco brachialis, supra and infra spinati, and teres major and minor. All these muscles gave a complete reaction of degeneration. The trapezius muscle was healthy.

The operation consisted of three parts:

(1) Transverse division of the capsule of the shoulder joint, followed by suture of the upper cut margin to the periosteum of the humerus two and a half inches lower down.

(2) Exposure of the tendon of the biceps, shortening of this long lax tendon by looping it on itself and fixing the tuck so made by sutures. These two steps brought the head of the humerus, which had been hanging down more than two inches and a quarter, hard up against the acetabulum.

(3) Severance of the deltoid muscle at its attachment to the clavicle and acromium; severance of the insertion of the trapezius to these two bones, followed by union of the cut margins of these two muscles with chromic catgut sutures, thus making one muscle out of the shoulder parts of the trapezius and deltoid.

Three months after the operation the patient could abduct the arm to a moderate degree, and this movement was steadily improving.

D. P. D. WILKIE.

Reviews

**KLINIK UND ATLAS DER CHRONISCHEN KRANKHEITEN
DES ZENTRALNERVENSYSTEMS.** A. KNOBLAUCH (Frankfurt a. M.). Berlin: Julius Springer, 1909, pp. 608. Price M. 28.

THIS is rather a difficult book to criticise, it is so excellent within its own scope, but on the other hand its limitations are so very obvious. It is beautifully printed and copiously illustrated by fine original photographs and by many diagrams, which are mostly, however, from other authors. There is little that is new in the book, which is hardly to be expected, seeing that it is the outcome of a holiday course of clinical lectures. The range of subjects dealt with is wide, and hardly all fall within the limits of the title, while other matters which do are either omitted or referred to so briefly that the volume can neither be regarded as a complete atlas nor is it systematised enough for a text-book. Perhaps it will be best if we indicate the contents—Herpes zoster; poliomyelitis, acute and chronic; peripheral neuritis; Little's disease; amyotrophic lateral sclerosis; muscular dystrophy; osteomalacia; myasthenia and Thomsen's disease; syringomyelia; caries of the

vertebræ; tabes and multiple sclerosis; "diseases of the cerebral portion of the cortico-muscular path"; cerebral syphilis; acute encephalitis; hydrocephalus and cerebral tumour; athyreosis, hypophysis tumour and acromegaly; hysteria and epilepsy.

J. H. HARVEY PIRIE.

DER BANKLEHRLING KARL BRUNKE AUS BRAUNSCHWEIG.

ROTH and GERLACH. Marhold, Halle, 1909. Pp. 30. M. 0.75.

THIS brochure constitutes Band vii., Heft 2 of the Juristisch-psychiatrische Grenzfragen series. It is concerned with a remarkable murder case that occurred a couple of years ago, in which a young man shot two girl friends at their request, but then had not the courage to commit suicide, as he had intended. He was condemned to eight years' imprisonment. ERNEST JONES.

ERLÄUTERUNGEN ZU IBSEN'S PATHOLOGISCHEN GESTALTEN.

I. : OSWALD ALVING. Eine pathologisch-literarische Studie zu Ibsen's "Gespenstern," by Dr OSKAR ARONSOHN. Marhold, Halle, 1909. Pp. 39. M. 1.00.

THIS little brochure is concerned with the question of the technical accuracy of Ibsen's delineation of Oswald Alving. The author discusses, in great detail, the matter of diagnosis, and concludes that all the evidence harmoniously accords with the usually accepted view that in "Ghosts" Ibsen was depicting a case of inherited syphilis in which the central nervous system was being attacked. He classifies the case as belonging to the melancholic type of juvenile general paralysis, and maintains that Ibsen's delineation is remarkably faithful. He puts forward the novel and plausible suggestion that, when, in the final apoplectiform seizure, Oswald repeatedly calls to his mother to give him the sun, what he is really striving to utter is an appeal reminding her of her promise to give him poison when the attack comes on; in other words, "sun" is a paraphasic mistake for "powder." To those interested in Ibsen's writings the book can be recommended as a careful, interesting, and reliable study. ERNEST JONES.

LA JOIE PASSIVE. M. MIGNARD. Paris: Alcan, 1909. Fr. 4.0.

THIS book deals with a subject that hitherto has received but little attention, namely, passive beatitude. It is considered from both a psychological and a psychiatric point of view. Beatitude occurs,

particularly in certain dementias, quite apart from any intellectual activity or emotional excitation, and indeed may be associated with a general slackening of mental functions and physical depression. The various euphorias and states of satisfaction are classified and described.

The book is interestingly written, maintains acceptable theses, but contains nothing startlingly novel. It is well worth reading.

ERNEST JONES.

FUGUES ET VAGABONDAGE. JOFFROY and DUPOUY. Paris: Alcan, 1909. Pp. 368. Fr. 7.0.

WE welcome this volume on the interesting and important subject of fugues, for it has the merit, amongst others, of clarifying our conceptions as to the manifold variety of the phenomenon. The authors, after a preliminary chapter on the relation between volitional and motor processes, divide the subject into different classes, according to the psychosis or psycho-neurosis in which the particular fugue occurs. They devote a special chapter to fugues in childhood. Curious is the denomination of the instinctive vagabond as an "ambulatory paranoiac"; this chapter is one of the most interesting in the book.

Forty-four personally observed cases are related, and the literature on the subject is extensively referred to. The references are exclusively French, although, as is well known, some of the very best work on the subject has been published in German. The amazing insularity of French scientific writers is notorious, and their neglect of work done outside their own country is in many directions becoming disastrous. The best side of this book is its clinical and descriptive one; the psychology is extremely poor. The book, however, well deserves the attention of every psychiatrist.

ERNEST JONES.

LA CYCLOTHYMIE. PIERRE-KAHN. Steinheil, 1909, *Thèse de Paris*, pp. 252.

UNDER cyclothymia the author understands the psychopathic constitution underlying the manic-depressive form of insanity. The book is another instance of how effectually Kraepelin's last generalisation is obtaining a foothold in French psychiatric circles, and Deny, who has done so much in this direction, has contributed to it an interesting introduction. The descriptive parts are well done, but the other sections, on ætiology, pathogeny, etc., are very banal.

ERNEST JONES.

LA FOLIE HYSTÉRIQUE. A. MAIRET and E. SALAGER. Coulet, Montpellier, 1910. Pp. 252.

SINCE it is becoming slowly but surely recognised that the chief mode of approach to the mental problems of the psychoses lies in a careful study of those of the psycho-neuroses, one must welcome the appearance of any work that purports to be a contribution to the subjects common to these two fields. The present volume, however, although based on a considerable amount of original observation, cannot lay claim to any great merit in this direction. It is decidedly an ordinary and mediocre production.

After a short historical review of the different opinions regarding hysterical insanity, the authors narrate some twenty cases of this nature, and then give a general account of their conclusions. They hold that in hysteria mental symptoms of alienation may arise that cannot be referred to any other psychosis, but which are in continuity with the preceding hysterical traits. They divide the cases into (1) hysterical insanity with crises of different kinds, (2) hysterical insanity with amnesia, and (3) hystero-vesanic insanity. As the study is based on a most superficial individual psychology the book has very little value.

ERNEST JONES.

BOOKS AND PAMPHLETS RECEIVED.

Laffer. "Blepharochalsis. Report of a Case of this Trophoneurosis, involving also the Upper Lip" (*Cleveland Med. Journ.*, March 1909).

Laffer. "Myatonia Congenita of Oppenheim, with Report of a Case" (*Ohio State Med. Journ.*, Nov. 1909).

Greene and Burch. "The Practical Utility of the Cutaneous and Conjunctival Tuberculin Tests" (*Trans. Assoc. Amer. Physicians*, 1908).

Hayes. "The Intensive Treatment of Syphilis and Locomotor Ataxia by Aachen Methods" (*Brit. Med. Journ.*, Sept. 1909).

Crichton Royal Institution, Dumfries. Seventh Annual Report.

The Mendel Journ., No. 1, Oct. 1909.

Langdon. "Diagnosis of Insanity." Address to Montgomery County Med. Soc., April 1909.

Albert Salmon. "La fonction du sommeil ; Physiologie, Psychologie, et Pathologie." Paris : Vigot Frères, 1910, 4 fr.

Löwy. "Beitrag zur Lehre von Querulantenwahn" (*Zentralbl. f. Nervenheilk. u. Psychiat.*, 1910).

Löwy. "Sensibilitätsänderung während unwillkürlicher athetose-ähnlicher Bewegungen wahrscheinlich 'Spontanbewegungen.'" Prag : Carl Bellmann, 1910.

Stöcker. "Klinischer Beitrag zur Frage der Alkoholpsychosen." Jena : Fischer. 1910, M. 7.50.

Hartenberg. "Die zwei Hauptformen der Suggestibilität" (*Ztschr. f. Psychother.*, Bd. 2, H. 1).

"Annali della Clinica delle Malattie mentali e nervose della R. Università di Palermo." Diretta dal Prof. Dr Rosolino Colella. Vol. III. Tipografico Virzi, Palermo, 1909.

Review of Neurology and Psychiatry

Original Articles

THE SYPHILIS-GENERAL PARALYSIS QUESTION.¹

By J. W. MOORE, M.D.

THE whole discussion of this much-talked-of subject has lately fallen into a controversy over whether or not the cytological, anatomical, and bio-chemical findings in the central nervous system and its fluids warrant the assertion, "Without syphilis there is no general paralysis."

At nearly every meeting at which papers on the subject are read, someone presents a synopsis of his recent work and of current literature, which he says shows conclusively that general paralysis cannot occur without previous syphilis. Another worker, equally well known, contends that for this reason and for that reason the proof is not sufficient, and that the evidence of the relationship of the two diseases is as presumptive as ever.

The writer will refrain from dogmatic assertions and even from expression of opinion, but will endeavour to show the present status of the discussion and the light that has recently been thrown upon it.

Briefly stated, the chief arguments in favour of general paralysis being of syphilitic origin are the following:—

1. About 80 per cent. of general paralytics give a history of, or show signs of having had, syphilis.²

¹ Read before the Section on Neurology and Psychiatry of the Academy of Medicine, New York, January 10, 1910.

² The number of cases of general paralysis which give a history of syphilis
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2. General paralysis, like syphilis, is much less common in women.

3. The Argyll-Robertson pupil occurs only in syphilis and general paralysis.

4. In juvenile general paralysis a history of hereditary syphilis is nearly always obtained, and other supposed causes do not figure.

5. Patients with general paralysis have never been known to contract a chancre,¹ and Krafft-Ebing's nine cases of that disease inoculated with syphilis resulted negatively.

6. The anatomical changes are similar in the two diseases.

7. The Wassermann reaction occurs in both.

In addition to the above may be mentioned the similarity of the infiltrative changes in general paralysis to those that are usually associated with luetic lesions. Since these elements, however, occur in other chronic inflammatory conditions, and are not therefore characteristic, they are not put forward as a convincing argument.

As evidence of the protest against which the adherents of the syphilis-etiology doctrine have had to fortify themselves we find an enormous array of arguments against this theory. Among those opposing it some deny that there is any etiological relationship; others admit that it may be the cause in some cases, but that it is not by any means necessary. It is not essential to deal separately with these groups of dissenting opinions, and they will be discussed together. The more important contentions are the following:—

1. About 20 per cent. of cases of general paralysis have no history of syphilis in the anamnesis and no physical signs of that disease.

2. The long interval between syphilis and general paralysis.

increases directly with the number of anamneses obtainable, and the care with which they are taken. Those who have been careful in collecting the required data in a hospital or clinic where general paralysis is treated have succeeded in reaching 80 per cent. or over (*e.g.* see report of the director of clinical psychiatry, Manhattan State Hospital, New York City, 1909; the statistics of the Dalldorf Hospital, compiled by Junius and Arndt). This statement applies to men, as for many and obvious reasons the percentage is much lower in women.

¹ In 1883 Kiernan (alienist and neurologist) reported ten cases of general paralysis who had contracted initial lesions, but they were superficially described and none was confirmed by autopsy.

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3. The fact that the syphilitic organism has not been found in general paralysis.

4. The failure of anti-syphilitic treatment to produce any effect on the course of general paralysis.

5. General paralysis does not occur among the natives in some parts of Africa where syphilis is extremely common.

6. Only a small percentage of syphilitics develop general paralysis.

7. The Wassermann reaction is not biologically specific.

If we accept the burden of proof for the theory of syphilis-etiology, and discuss these objections and the answers to them, we will cover the whole ground of the controversy.

1. *Syphilis in the Anamnesis.*

In tertiary and secondary syphilis 25 to 50 per cent. give no history of primary lesion. Neisser has shown that it is possible to infect an ape with syphilis without a primary sore developing. In one of the special syphilitic clinics of Munich 36.5 per cent. of latent syphilitic cases showed no physical signs. Many cases of general paralysis, although showing active tertiary lesions, absolutely deny having contracted syphilis. All these facts go to show that the assumption that the 20 per cent. who deny syphilis, still may have had the disease, is not so unreasonable as has been claimed. Great assistance in this subject comes to us in the proof recently brought by Müller, that general paralysis in adults may result from congenital or inherited syphilis. His three cases were aged respectively 42, 43, and 53. It is probable that accurate anamneses obtained concerning the parents, and relative to symptoms of inherited syphilis, would give a higher percentage of histories of that disease. Moebius remarks pertinently, "In other diseases, if we find characteristic symptoms, we concede the etiology of each case to be that of the disease in question. Do we say that malaria is to-day caused by the plasmodium, to-morrow by something else; that tetanus is caused one time by Nicolauer's bacillus, again by taking cold? And where have we more clear-cut diseases than tabes and general paralysis? The more I think of it, the more I am convinced that they do not exist without syphilis." Moebius refers to general paralysis as "cerebral tabes."

2. *The Interval between Syphilitic Infection and Onset of General Paralysis.*

To this objection there is little to be opposed. It is certainly extraordinary that syphilis, which has such a heterogeneous, almost haphazard distribution, should, after a period of years, suddenly manifest such pronouncedly selective action. Some explain it by saying that the brain is diseased at the start—that possibly general paralytics are recruited from those cases of secondary syphilis which show spinal lymphocytosis. Kraepelin assumes that a chronic syphilitic disorder is set up in some of the viscera intimately concerned with metabolism, which, after a long time, reaches a stage where the body is suddenly overwhelmed by a severe metabolic disorder, which produces, among others, the cerebral changes. Mott's theory that general paralysis is the result of over-immunization or over-production of lipoids on the part of the nervous system through a long period of time would, in a way, explain the interval.

One feature of this interval goes far toward fixing the relationship of the two diseases, namely, the constancy of the average of fifteen years between syphilitic infection and onset of general paralysis. Heiberg studied the statistics of syphilis in the various clinics of Copenhagen and compared them year for year with the number of deaths from general paralysis in St Hans hospital. In the year 1869 and 1870 an unusually large number of cases of syphilis were reported; fifteen years later, 1884 and 1885, the statistics for general paralysis for St Hans hospital showed a great increase. In 1886 a similarly large number of cases of syphilis occurred, and fifteen years later, in 1902, there was another very high death-rate from general paralysis. The figures for these years show such a decided gain over all other years as to be very striking. Of further significance is the fact that most juvenile cases develop after this same interval of fifteen years, considering luetic infection to have occurred at birth or soon after.

3. *The Non-Occurrence of the Syphilitic Organism in General Paralysis.*

This objection is not a serious one, as it is quite possible that the organism may have undergone a profound change during the long period of its dormancy. Our knowledge of protozoal

evolutions is as yet very limited. The life cycle of the plasmodium malariae is the only one which is known, and of the spirochæte of Schaudinn we know as little as of any. Then again they may be extremely scarce, as they often are in cerebral lues. The test of this question lies in an important experiment which has as yet not been tried, namely, the inoculation of apes with the cerebro-spinal fluid or serum from general paralytics. Hoffmann produced syphilis in an ape by inoculating with the cerebro-spinal fluid from a case of secondary syphilis. What will happen when the same experiment is performed with the spinal fluid from a case of general paralysis? Will the changes of general paralysis be produced or those of syphilis, or none at all?

Under this heading may be mentioned the interesting analogy which exists between sleeping sickness and general paralysis, and which affords significant evidence for the subject in question. Only recently has it been demonstrated that sleeping sickness was a later form of the well-known African fever, and that both are caused by the trypanosome. African fever runs a course and has symptoms much like syphilis, and is followed after an interval by the sleeping sickness, which resembles general paralysis clinically and in the anatomical changes found. Assuming general paralysis to be of syphilitic origin, the points of similarity between syphilis and trypanosomiasis and their sequelæ, as pointed out by Browning and Mackenzie, are:

1. Both organisms are protozoa.
2. Both have positive Wassermann reaction in the blood serum.
3. Both have early lymph-gland involvement with febrile disturbance and rash, periods of latency, and late involvement of the central nervous system.
4. The histological changes are similar.

The one point of difference is that, while the trypanosome can be easily demonstrated in sleeping sickness, the spirochæte has not yet been found in general paralysis. Perhaps we are justified in assuming that since the analogy is so faithful up to this point, the failure to find the spirochæte is due to a change in its staining properties or to a great scarcity.

4. *The Uselessness of Anti-Syphilitic Therapy in General Paralysis.*

Plaut states that this question cannot be argued so long as we know nothing of the pharmacological working of mercury in

syphilis. Obersteiner suggests that it may be due to the fact that nerve-tissue does not regenerate—that possibly with mercury we can arrest the process but cannot repair the damage already done. Browning and Mackenzie mention that the site of the lesion may prevent the action of mercury, since the meninges are impermeable to bacterial antibodies and even to potassium iodide. They do not explain why so many cases of cerebral syphilis yield to treatment under the same difficulties.

5. *The Distribution of General Paralysis.*

This topic opens up a wide field for discussion. Studies on the geographical and racial distribution of general paralysis reveal some significant facts and some that are strangely contradictory. Among the natives in certain parts of Africa and India syphilis is indeed widespread and general paralysis not known. This fact has received various explanations, and against it has been placed the equally important one that in countries and among classes of people in which syphilis is unknown, general paralysis is also never seen. For instance, no nun has ever been known to have general paralysis, and cases among priests and quakers are extremely rare. It is held by those who regard syphilis as the cause of general paralysis that it is only after syphilis has existed in a country for centuries that general paralysis begins to develop. This would explain the absence of the disease among the natives of Africa, where syphilis has been introduced comparatively recently. Investigations of the history of syphilis by Hirschl have shown that general paralysis appeared in Europe at least two hundred years after the introduction of syphilis. What was probably syphilis was described in Italy as early as 1250 A.D. (although some claim it was introduced by Columbus' sailors), while general paralysis has only been observed since about 1670. In the negro in the United States it has made its appearance within sixty years, or about two hundred years after the negroes were first brought here. Somewhat in support of this view is the finding of Fournier, that only mild cases of syphilis develop general paralysis. He followed two hundred and forty-three cases of syphilis which had severe symptoms for a long period of years, and none developed general paralysis, while eighty-three general paralytics had had extremely mild secondaries and only three had had tertiary

symptoms. It is well known that when syphilis is first introduced into a country it runs an extremely severe course, whereas in Europe and America, where syphilis has existed for centuries, it has gradually changed from an acute, frequently fatal disease to a comparatively mild infection. Fournier's view, however, that the cause lies in the fact that the mild cases receive little or no treatment is quite untenable, for we often see general paralysis in individuals who have had very thorough treatment, and in tropical countries, where syphilis is seldom treated, general paralysis is unknown. Furthermore, several writers have claimed the reverse, that it is those cases which receive treatment which are especially prone to general paralysis, and that mercury is really the cause.

In Iceland only three cases of general paralysis have been reported, and all occurred in coast towns where syphilis was imported by sailors, all other parts of the island being free from both syphilis and general paralysis.

If it be true that syphilis must go through a sort of incubation period of several centuries before general paralysis makes its appearance, it is difficult to explain why it should be so scarce in China and India, where syphilis has existed for thousands of years. Among Mahomedans general paralysis is also very rare, and this is explained by opponents of the syphilis etiology as being due to the abstinence from alcohol prescribed by the Koran. In Canada for some reason there is a very low percentage of general paralysis among the insane. Altogether, the question of race seems to play a more important part than that of climate, but the fact remains that, wherever general paralysis is found, there syphilis has existed for some time. This certainly would appear to be the stronger side of the argument, and to explain those localities, where syphilis exists without general paralysis, it is not difficult to conceive of a racial immunity or an insufficient length of time since the introduction of syphilis into the country.

6. *Percentage of Syphilitics which develop General Paralysis.*

We have no means of calculating how many cases of syphilis develop general paralysis, but by rough estimation from the statistics of the two diseases it is probably one or two per cent. But those who object to the syphilitic origin on this ground

must also hold that tertiary symptoms are independent of syphilis, for only three to seven per cent. of syphilitics have tertiary lesions, and yet we know that tertiary lesions are syphilitic, for they can be inoculated into apes and produce primary sores. Plaut assumes that the difference in symptoms and their reactions to remedial agents in the tertiary and metaluetic disorders is due to a change in the resistance of the host, and that the organism is the same and unchanged.

7. The Specificity of the Wassermann Reaction.

The Wassermann reaction has added much zest to the discussion of this vexed question. Plaut and Wassermann still contend that the reaction is specific, but that the syphilitic antibody merely has the peculiarity that it will unite with lipoids. That it occurs in a few cases of scarlet fever, in leprosy, and in sleeping sickness is no more argument against its specificity than that the typhoid agglutination reaction occurs in icterus and ptomaine poisoning. The majority of those using the Wassermann reaction, however, believe it to be merely a phenomenon of interaction between lipoids. But though this is true the fact that the reaction is positive in nearly 100 per cent. of all cases of syphilis and general paralysis, while nearly always negative in all other diseases of the temperate zone, is one of the strongest presumptive evidences yet produced in favour of the luetic origin of general paralysis.

Other Etiological Factors.

The causes other than syphilis most often mentioned are alcohol, trauma, mental strain, sexual excesses, insolation. Of these the first three only need serious consideration.

Alcohol, indeed, seems to play a part, as evidenced by the scarcity of general paralysis among Turks and some other abstinent peoples. In the Tyrol general paralysis is five times as common in the northern part as in the southern, due apparently to the slight consumption of alcohol in the latter. Writers have recorded as high as 75 per cent. of cases of general paralysis as being excessively alcoholic. Kraepelin is inclined to regard alcohol as an important feature. On the other hand, Obersteiner, Hirschl, and Fournier found only a low percentage of alcoholics

among their cases. Plaut carefully recorded the actual amount of alcohol consumed by patients in a large clinic, and general paralysis ranked among the very lowest in percentage of alcoholics.

Trauma precedes the development of general paralysis in a certain number of cases. It is difficult to gauge its significance, since in many instances the accident results from ataxia or a cerebral apoplexy, which are due to an already existing general paralytic process. It is probable that trauma stands in much the same relation to general paralysis that alcohol does.

The more active mental life of civilised countries is given as one of the causes of general paralysis. Attention is called to the fact that the ease of maintaining a livelihood and the lazy habits of the southern climates are responsible for the increase in the frequency of the disease as we go north. In the province of Orne in France, alcohol and syphilis are very prevalent, but the natives lead an easy-going life and general paralysis is rare.

Granting that these exogenous factors may enter into the etiology of general paralysis, they do not lessen the position of syphilis as an essential precursor. That none of them is necessary for the development of the disease is shown by the juvenile form, where all may be easily excluded, and where a history of hereditary lues is obtained in nearly every case. The influence of heredity and of predisposition have been much discussed, but probably plays a small rôle in the etiology. Certainly there are fewer cases of general paralysis with bad heredity than of almost any other mental disorder.

The discussion of etiological factors other than syphilis would be incomplete without reference to the bacillus paralyticus of Ford Robertson. Inasmuch as the acceptance of this view of the specific infectious nature of general paralysis involves a radical departure from all claims of syphilis as in any way connected with the disease, its discussion would involve a detailed weighing of the arguments of the one theory against those of the other, for which space is not available. That Robertson has not received enthusiastic or widespread support, but, on the other hand, has been the subject of much adverse criticism, cannot be pointed out as against his opinions, since similar adversities have surrounded the inceptions and early histories of many of our most important discoveries. It does, however, militate against

his theories in that so few cases have as yet been recorded, which bear out his views, that they certainly cannot be placed against the thousands which have contributed to the statistics upon which the syphilis-etiology theory is founded. While Robertson has evolved several very plausible and ingenious arguments in favour of his theory, he has not brought forward any new facts or observations to discredit syphilis as the cause. It is a situation in which we are confronted with two empiricisms which we may choose between. As yet the balance of probability and of opinion seems to be much on the side of the older school, and without doing violence to the new, we may say that syphilis still holds a more important position than the bacillus paralyticans in this question, in which all the evidence is, at best, circumstantial.

Syphilis or Metasyphilis.

A side discussion has arisen among the syphilis-etiology adherents regarding the position of syphilis in its relation to general paralysis. Plaut has concluded that it is not unlikely that active syphilitic virus is present in the system while the general paralysis process is going on. Browning and Mackenzie have referred to the analogy between syphilis and trypanosomiasis, and predict that general paralysis will be found to be a true syphilitic process, as sleeping sickness is true trypanosomiasis. There are several reasons why this theory is poorly founded, and why general paralysis should still be regarded as metasyphilitic. In the first place, in spite of diligent search, no spirochætæ have been found in the nervous system nor in other organs in general paralysis. It is possible that they exist, but in a form altered both as to morphology and toxicity. Secondly, the long interval between the two diseases. Thirdly, the obvious anatomical distinction, as pointed out by Alzheimer, between true cerebral syphilis and general paralysis. Fourthly, when tertiary symptoms exist simultaneously with general paralysis, the former yield to treatment while the latter is not affected.

The final proof of this question lies, of course, in the test of inoculating apes with general paralysis material. Fischer states that the histological findings do not allow of regarding general paralysis as a direct syphilitic process.

What determines which Syphilitics shall develop General Paralysis and which not?

We have seen that the influence of alcohol, trauma, etc., is only of incidental importance. In many cases they are not present, and thousands who have the combination of these factors with syphilis never develop general paralysis. With regard to mercurial therapy, the fact that some hold the neglect of treatment to be the cause, while others claim that the mercury itself is responsible, discounts the importance of both contentions.

Some writers go back to the time of the luetic infection, and argue that there is a special variety of syphilitic virus which has a predilection for the nervous system. There is considerable evidence in favour of this view. There have been instances of as many as five men contracting syphilis from one source, and all becoming either tabetic or paralytic. Also cases of conjugal and familial general paralysis are referred to as evidence in favour of this view. Another fact which may be used to further this hypothesis is that the course of the syphilis preceding general paralysis is almost always mild. Although this has been used as an argument to show the existence of a special constitutional resistance to syphilis, it seems quite as allowable to regard it as indicating a special type of virus. Plaut contends that the instances of conjugal and familial general paralysis, and of cases of general paralysis which have contracted their lues from the same source, are rare, and, compared with the great numbers of cases of syphilis and general paralysis, are merely curiosities.

Obersteiner and others go still further back, and believe that the determining factor for general paralysis is already present before the syphilitic infection, in the shape of a constitutional predisposition. Mental defects of constitution are certainly rare in general paralysis, but Obersteiner suggests an organic vulnerability which may yet be discovered. We know that brains vary greatly in the strength and thickness of the fibres, and in the character and size of cells and blood-vessels. It may be that in some such a condition, as, for instance, a defect in the blood-vessels causing a nutritional disorder, may be the weakness which allows of attack by the syphilitic virus. As mentioned before, it is claimed in support of this last theory that the slightness of the luetic manifestations in cases which later develop general

paralysis speaks for an already existing peculiarity of reaction or resistance to syphilis which may be responsible for the later changes of general paralysis.

Conclusions.

1. The weight of evidence is in favour of syphilis as an essential cause of general paralysis, and, if a history of the disease is not obtained, we are probably justified in supposing either that the infection has been so slight as to escape notice, or that it was inherited.

2. Alcohol, trauma, and other factors merely play the part of lowering the general resistance, as they do to any disease.

3. Whether the occurrence of general paralysis after syphilis is determined by a constitutional predisposition, by a special form of the virus, or by the incidence of some other factors, is not yet clear.

4. General paralysis must still be regarded as a meta-syphilitic disease rather than true syphilis.

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CONCUSSION OF THE CORD. COMMOTIO SPINALIS. TRAUMATIC MYELITIS.

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IN the past these names have been used to indicate many different conditions. In order to escape from the confusion thus created, it is necessary, as Bailey points out, to define the sense in which the word "concussion" is used. Concussion signifying a blow or shock may be used to indicate various forms of violence, and is the cause, direct or indirect, of all kinds of spinal cord injury. Its use in this sense is, however, hardly desirable.

The question to be discussed and decided is whether the term "concussion of the cord" may be used to describe a distinct clinical entity and pathological condition comparable to concussion of the brain. This name is used to describe a fairly well-defined clinical state and underlying pathological condition, about which some precise statements can be made.

As the result of violence to the skull there follows a generalised dissolution of the functions of the brain, which may be depressed to such an extent as to cause death. In general, however, restoration of function occurs within a short time,

measured usually by minutes or hours, rarely by days. No increase in the gravity of the symptoms occurs when once the early stages are completed and no new symptoms appear. A complete return to the normal is possible and is the rule.

Concussion has been commonly defined as a shake of the cranial contents without any structural lesions, and it is certain that neither contusions, lacerations, or hæmorrhages are found in many instances. Hence, since complete recovery often occurs, the symptoms of concussion are classified as belonging to the functional class. Yet it is probable that a completely sharp line of differentiation cannot be always drawn between the pathological states of contusion and concussion. The brain does not behave precisely as a fluid, and the reaction to a blow is not uniformly distributed throughout its mass; it is most intense at the points of application, and in these parts of the brain opposed to fixed points—the points of contre-coup.

Further, the cerebro-spinal fluid is put into violent commotion, and tends too suddenly to escape by the natural exits. In both of these ways tearing of lymph channels and of fine capillaries may occur with some kind of hæmorrhage and resulting destruction of cerebral tissue, finally ending in areas of local necrosis. Certain remote symptoms may perhaps be referable to such lesions.

If, then, the term "concussion of the spinal cord" is to be used to denote a clinical entity and pathological condition having parallel characteristics to concussion of the brain, we should, *à priori*, predicate the existence of a class of cases characterised by paralysis of all the limbs, disturbance of sensation and sphincter paralysis, without lesions of the bone or structural change in the spinal cord, and in which rapid recovery was the rule.

Apart from associated concussion of the brain and the symptoms of collapse, no class of cases comparable to this picture exists. It is possible that apparently complete recovery from grave spinal cord symptoms may occur, but the collateral clinical and anatomical evidence show that these are of organic origin, probably examples of some form of hæmatomyelia. As indicating any parallel state to concussion of the brain the term should, therefore, not be applied to the spinal cord.

It is known, however, that certain remote symptoms sometimes occur after concussion of the brain, and these have been

attributed to small gross alterations of a structural nature. In rare instances parallel symptoms appear at a remote period to blows on the spinal column certainly referable to structural change, their genesis and characteristics distinguish them from all other spinal cord lesions dependent on lesions of the bones, or hyper-extension of the cord with its resulting hæmatomyelia. These cases are best described under the name of traumatic myelitis.

TRAUMATIC MYELITIS.

Under this name there are excluded all lesions of the cord directly resulting from injury to the vertebræ, the vertebral ligaments or articulations, all forms of hæmatomyelia, all acute infections of the cord indirectly the result of vertebral injury.

It comprises a group of cases in which after the injury little or no disturbance of the functions of the cord is observed, then within some time, varying from days to a few months, gradually symptoms of paresis, slight disturbance of the bladder functions, and of sensation appear, which may proceed to marked spastic or spastic ataxic paraplegia. They do not resemble either the well-defined system diseases on the one hand or disseminate sclerosis on the other, and in their mode of onset and clinical signs they differ from hæmatomyelia.

In the chapter on "Traumatic Lesions of the Spinal Cord" in his *Manual*, Sir Wm. Gowers divides the pathological conditions which may result from injury to the spinal cord into:—
(1) Those in which injury causes instant damage to the cord;
(2) those in which there is at first few or no symptoms, but in which grave symptoms come on in a few days or weeks;
(3) those in which after a period of one or several months gradual system disease develops.

The cases I record would be included in his second class. Sir Wm. Gowers adopted the hypothesis, before the publication of Schmaus' original experimental investigations in 1890, that the influence of the blow is exerted on the molecular nutrition of the nerve elements, and that subsequent structural disintegration ensues. He relates several valuable cases. One is that of a lady who was severely shaken in a railway collision. Immediately after the accident there appeared to be no injury,

but in a few days paraplegia developed, and from its consequences she died in six weeks. An examination of the cord showed a condition of sub-acute myelitis, chiefly in the white columns, varying in its extent in different regions, but in most parts considerable in the pyramidal tract.

Such cases are rare; their importance is partly due to the probability that, as Sir Wm. Gowers says, an effect of a blow, extreme as in the case thus quoted, may and must often occur in slighter degree.

Illustrative Cases.

J. H., æt. 55. Five years ago was hit on the back by a bale of cotton, and had to go to hospital for ten days and remain at home for five months, complaining of pain in the back; during this time he could walk fairly well, though he thought he was not "safe on his legs." This slight paresis remained for about a year, and then gradually weakness increased in the legs.

When first seen by me there was distinct ataxia in the gait, with some rigidity of the limbs, and marked Romberg's sign, the knee jerks were brisk, but neither ankle clonus nor extensor plantar response were present.

There was distinct but slight impairment of sensation over the lower limbs, the sphincters normal. No nystagmus was present, and the ophthalmoscopic examination was normal.

The patient showed a moderate degree of arterio-sclerosis. The urine was normal.

Eight months later the ataxia and spastic signs had obviously increased. A short ankle clonus had developed and the plantar response was ambiguous. Sensation was more impaired, especially in the feet.

The condition gradually increased and the spasticity became more obtrusive, so that the patient not unfrequently fell down. The reflexes remained as before.

This appears certainly to be an example of organic disease, and the causal influence of the injury seems certain. The pre-existing arterio-sclerosis is, of course, important, and no doubt a disposing factor. The pathology was assumed to be a slow degeneration of the posterior and lateral tracts of the cord.

The following is from Kurt Mendel:—

I. D. K., æt. 42. No history of alcoholism or syphilis.

At the commencement of 1893 he fell from a ladder on to his back and the left side of the body. He was found to have broken the lower ribs and had to remain in bed five weeks. Fifteen months later the left leg had become distinctly weak, and three years after the injury

there was a spastic gait, increase in the reflexes, slight ankle clonus, and occasionally weakness in the bladder functions.

In July 1897 the spastic condition was marked with double ankle clonus and distinct loss of sensation; the left limb was obviously weaker than the right.

The clinical course and picture of this illness is quite different from any pathological condition due directly to mechanical lesion of the cord or to hæmorrhage.

Schäfer records the following:—

A healthy man, æt. 21, fell on to his back, there was no external injury: for the first four days nothing was noticed, but on the fifth he began to suffer from pain in the region of the pelvis and trunk, on the tenth day he had difficulty in micturition and slight paresis of the lower limbs. On the fifteenth day the weakness had increased, and the bladder and rectum were more definitely affected: this increased until the sixth week, when there was total paraplegia and loss of sensation: death took place from pyelonephritis, four and a half months after injury. A thorough post-mortem examination was made, the vertebral column was unaffected, the spinal cord showed a softening in the posterior columns in the sacral and lumbar region, whilst in the dorsal region there was a total destruction of the cross section.

Microscopically there were areas of degeneration and necrosis; no trace of hæmorrhage was found anywhere.

Veraguth records the following instance:—

A man, æt. 28, in good health, and with no history of syphilis or other antecedents of importance, in May 1903 fell out of a carriage, and was picked up unconscious, but soon recovered: two days later, whilst walking, he was taken with a sudden weakness in the legs; this weakness became more noticeable, and on 1st July he consulted a physician, who, although the findings of a lumbar puncture were negative, prescribed an energetic syphilitic course: the paresis increased, so that he could only walk with the aid of sticks: the knee jerks and ankle jerks were increased, and the plantar response was extensor in character, the clinical picture being now of a spastic paraplegia. This state remained permanent.

The author considers the symptoms due to necrotic change in the pyramidal region of the cord.

W. G. Spiller gives an account of a patient who fell a distance of eight feet on to his face. He was unconscious for several hours, and a few days later, when the mental condition was restored, was found to have great weakness of both arms and legs, and incontinence of urine and fæces. Sensation for touch was normal, but for pain and temperature was deficient below the neck. There was no sign of vertebral fracture; death took place on the thirty-eighth day.

A thorough post-mortem showed that there was no sign of vertebral fracture nor of pressure upon the cord, but in the fifth cervical

segment a transverse myelitis with minute hæmorrhages and Marchi degeneration scattered throughout the section.

Whilst this case differs from the others mentioned by its clinical resemblance to hæmatomyelia, the pathological findings show that it cannot be classed as one of that condition, and is perhaps most correctly described as an example of traumatic myelitis.

The knowledge of their pathology is founded on—

1. *Certain post-mortem findings.*
2. *Animal experimentation and subsequent examination.*

Thus Schmaus and Sacki in their book figure clearly a combined degeneration in the posterior and lateral columns taken from a patient who began to suffer symptoms some months after a severe blow to the back. The degenerations are not so sharply defined as in the true system diseases. In other cases multiple, localised necrotic areas have been found.

The genesis of the pathological change is thus given by Schmaus. He believes that in consequence of the external violence a forcible movement takes place in the cerebro-spinal fluid, resulting in the crushing and tearing of nerve tissue. Hence after the lapse of time there should be present, in the midst of living tissue, signs of nerve cell and nerve fibre destruction. These give rise to degenerations, to neuroglia proliferation, and to local scar or cavity formation.

Apart from the comparatively rare post-mortem evidence in human subjects, Schmaus has supported his views by animal experiment. Repeated blows applied to the spinal columns of kittens, and in such a way as to avoid any local injury to the bones, were found to produce the symptoms of paralysis, loss of sensation, atrophy of muscle, bed sores, and bladder paralysis. Examination of the spinal cord showed there was neither destruction nor hæmorrhage of the cord, and that the bones were intact. There was no evidence of any direct injury. Meningeal hæmorrhage also was absent, and only rarely was capillary hæmorrhage found on section of the cord.

Microscopically, however, certain fine changes were present ; there were swellings of the axis cylinders with the formation of masses of hyaline bodies. The Marchi method of demonstrating degeneration showed the characteristic fine black granules. The ganglion cells were found in the state of chromatolysis. Sometimes the change was found to be most pronounced at some

special region of the cord, and from this spot ascending and descending degeneration could be traced. These findings are certainly significant, and suggest a mode of origin of organic disease which may account for the symptoms of the class we have described as traumatic myelitis.

Several other writers, both from pathological evidence in man and experimentation, have reached substantially the same conclusion as Schmaus.

Experiments have been made by Kasowsky, Bickeles, and Luxemburger, who find that striking the spinal column in animals with a force insufficient to cause any demonstrable bony lesion may yet give rise to severe symptoms and pathological findings in the shape of degenerations of myelin and minute capillary hæmorrhages. Westphal has also maintained the same view from post-mortem studies in man.

The existence of traumatic myelitis seems to be proven. It is rare as a clinical state, but a knowledge of its existence should act as a caution in making a diagnosis of a purely functional disturbance after injuries to the back.

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TRAUMATIC DELAYED APOPLEXY.

By W. B. WARRINGTON, M.D., F.R.C.P.

IN any case of cerebral hæmorrhage (excluding those of the hæmorrhagic diathesis) one or both of two conditions are present, viz., a disease of the blood vessel wall and increase in the lateral blood pressure. It is only on rare occasions that a healthy blood vessel ruptures, however great the internal pressure may become. The adequate rise of the blood pressure is either more

or less permanent, as in granular kidney with hypertrophy of the heart, or temporary from many causes, such as severe muscular exertion, forcible expiratory efforts as in coughing and sneezing. Psychological excitement also is associated with a rise of blood pressure which has been the immediate exciting cause of death in many persons suffering from aneurysm. An injury to any part of the body causes an immediate rise of blood pressure by reflex stimulation of the vasomotor centre. Hence it follows that with pre-existing vascular disease somatic or psychological trauma may, *at the moment* of their action, be the exciting cause of cerebral hæmorrhage.

All cases of cerebral hæmorrhage due to injuries to the skull sufficient to cause a loss of continuity of the bone are excluded from consideration. It is, however, maintained by many that any injury, whether applied directly to the skull or other part of the body, may so affect the cerebral circulation as to cause an apoplexy occurring some time after the injury. These classes of cases are spoken of as delayed or late traumatic apoplexy.

They fall into two groups:—

1. The commoner, in which with pre-existing disease an apoplexy occurs some time after the injury.
2. A very much rarer group, where the injury is alleged to cause an apoplexy without pre-existing vascular disease.

To explain these cases a hypothesis has been put forward founded on some experimental work of Duret's. This observer found that in dogs when brain concussion had been produced by blows upon the skull, small areas of softening and minute hæmorrhages were present in the neighbourhood of the aqueduct and floor of the fourth ventricle; these he considered as due to the sudden movement of the cerebro-spinal fluid impinging upon these places.

Bollinger adopted this work to explain the cause of delayed hæmorrhage in man. He considered that owing to the softening of the tissue surrounding the vessels, there was diminished resistance to the lateral pressure of the blood, and that hence at any given moment after sufficient time had elapsed in order to furnish the required changes, the pressure might cause a rupture in a vessel already diseased.

This hypothesis has been further expanded to explain the actual causation of disease in cerebral vessels previously healthy. The walls of the blood vessels, supported only by damaged tissue, yield; thinning and disease of the vessel wall, with the production of miliary aneurysms, result. According to this view the region of the aqueduct and fourth ventricle should be a site of predilection for such cases of delayed hæmorrhage.

Mendel relates an example which may be regarded as fairly typical, a case where the lesion was in this site, and which also belongs to the rarer group.

A woman, æt. 32, apparently healthy and with no history either of alcohol or syphilis, fell upon a stone slab on to the left side of the head. Consciousness was lost for a short time, but there was no signs of injury to the bones. Afterwards she complained of headaches, and some time later complete paralysis of the pupil was observed without any affection of the external eye muscles or of other parts of the body.

The lesion could hardly have been elsewhere than in the anterior part of oculo-motorius nucleus, and as the injury was of considerable severity, occurring in a young woman without any previous vascular disease, and a direct continuity of symptoms could be traced, it may reasonably be assumed that the injury was the causal factor. As a matter of fact, however, in the majority of instances recorded as examples of this kind of cerebral hæmorrhage, the lesion is not in this region of the brain, but in one of the hemispheres, and are followed by ordinary hemiplegia. The occurrence of apoplexy some time after blows upon the head is sufficiently often mentioned in clinical records to require us to admit that an injury to the skull may be a causal factor in its production, but the evidence must be carefully sifted.

Hockheim relates the following case :—

A healthy man, æt. 34, was, on 9th February 1906, thrown on to the back of the head. There was only momentary loss of consciousness, but on being helped up he complained of great pain in the head, and a swelling of the soft tissue was soon present. He went again to his work, where his foreman soon observed a change in his disposition; he came late to work, was indifferent and apathetic, and still complained of headache. On the 21st April he became somnolent, and was admitted to hospital, and on the 25th he passed into a comatose condition, with right hemiplegia. On recovery from the coma he was found to have a considerable amount of aphasia. In the course of time the aphasia disappeared, but his hemiplegia was permanent.

I am indebted to Dr John Owen, of Liverpool, for the following valuable case :—

Andrew C., æt. 27, was, on 21st June 1909, hit upon the head during the religious riots which at that time were rife in the north of the city of Liverpool. He was admitted the same night to the Stanley Hospital in a stuporose condition, and showed signs of a cerebral irritation and delirium. On the third day he became an out-patient, and attended regularly each day, complaining of headaches and pain at the back of the head. On the 4th July—that is, thirteen days after the injury—he became comatose and died. The patient was a well-developed, muscular man, and, as far as could be ascertained, in previously good health. At the autopsy a recent scalp wound perfectly healed was seen at the back of the head; no other external injury was found, and no fracture of the skull. Under the pia-arachnoid of the brain was an effusion of blood reaching forwards and upwards towards the vertex, and most marked around the pons and interpeduncular space. On examining the lateral ventricles, serous fluid with some clot was found. There was rather more clot in the third ventricle, whilst the cavities of the iter and fourth ventricle were completely filled with clot. The brain mass was free from any trace of hæmorrhage. There was no degeneration of the vascular system, either in heart, aorta, or vessels of the brain. Kidneys and other viscera normal.

It seemed obvious that here the rupture was primarily intraventricular, and that the blood had escaped from the foraminæ of the fourth ventricle into the subarachnoid space.

Although the views put forward by Bollinger obtained acceptance for a long time, the evidence upon which they were formulated was extremely faulty, as was pointed out in a well-known criticism by Langerhans.

He writes :—"I lay at once the axe to the root of the entire doctrine, and set myself in opposition to the generally prevailing opinion."

So far as the observations of Bollinger are concerned, he must be held to have been successful. Yet this or a similar hypothesis are not *à priori* improbable. Kurt Mendel advances the following suggestions of the pathogenesis of traumatic late apoplexy :—

1. On account of softening in surrounding tissues, the result of the mechanical agitation of the brain substance, the vessel dilates and its wall becomes thin.
2. The vessel wall takes part in the concussion and suffers from fatty degeneration.
3. Miliary aneurysms are formed on account of changes in the walls of blood vessels.

4. A disturbance in the nutrition of the walls of the blood vessels secondary to circulatory disturbance with consequent formation of aneurysms.
5. A certain relation exists between accident (trauma) and arterio-sclerosis, especially of the vessels of the brain and spinal cord.

A. R. Allen, in a recent excellent paper on this subject, considers that the chief effect of the shaking of the brain substance from injury falls upon the vessels, since they are filled with an incompressible fluid. At first there is a general vasomotor constriction, soon followed by a paresis of the vessel wall. The vessels particularly injured undergo epithelial proliferation, and thrombotic processes are set up.

Allen's case is, shortly, as follows :—

A. M., a woman, æt. 30. The only important part in the previous clinical history is that she had suffered from temporary insanity. Alcoholism and venereal disease seemed excluded. On February 27, 1907, she had a quarrel with a neighbour, and was repeatedly struck upon the face with the fist. From this time she began to complain of severe headaches which were not localised. Ten days later she suddenly fell to the ground, and was found to have right hemiplegia and aphasia. She was not unconscious. Death took place on March 18. The post-mortem showed a certain small amount of chronic interstitial nephritis, but no undue arterial degeneration. A careful examination was made of the nervous system, and the cause of the hemiplegia found to be multiple thrombi in the vessels in the region of the globus pallidus and putamen of the lenticular nucleus, the thrombosis being due to hyperplasia of the endothelium. One vessel showed some calcification.

In view of this statement, and also from the presence of slight renal disease, this case can hardly be classified in the rare Group II.

Indeed, the alleged examples of this group seem to diminish the more they are scrutinised.

Marie and Crouzon, in a review on the subject, say that all the recorded cases had pre-existing vascular disease. A very short interval, a few days, for example, as in Israel's case, between the injury and the apoplexy, is self-evidence of pre-existing disease.

The cases falling in the first group, where pre-existing disease is known to exist, or is likely from a history of renal or heart disease, alcoholism, syphilis, or arterio-sclerosis, are far more numerous, and therefore, from a forensic standpoint, more important.

The legal question is merely whether an injury has precipitated or accelerated the possible onset of cerebral vascular disease. The answer in many instances must be either impossible or uncertain; for the more definite the pre-existing disease, the greater the probability that the vascular lesion is due to natural causes, whilst if the evidence of pre-existing disease be slight, then it becomes more difficult, since the pathology is so hypothetical, to feel convinced of the causal relationship.

We have, in fact, to rely chiefly upon clinical evidence and to take a wide survey of the possible significance of any symptoms complained of in the interval between the injury and cerebral seizure. Symptoms which indicate definite functional disturbance of the brain, such as temporary aphasia, slight paresis, disturbance of the mechanism of swallowing, numbness and tingling in the limbs which later become paralysed, a fit, localised pain in the head or mental hebetude or excitement, will carry a good deal more weight than vague symptoms such as some amount of diffuse headaches, sleeplessness, or fatigue.

The precise problem is not whether the interval symptoms are the result of the injury, but whether they indicate an advance of a pre-existing morbid state of known pathology.

The following case, in which I was interested, was recently brought into court and decided against the plaintiff. Thus:—

Sam. K., æt. 35, a master of a small sailing-boat, as he was at a quay, attending to the yard of a mast, fell some distance into the water, and in doing so was jammed to a slight extent by the hull of another ship. He broke his fall by his arms, which were bruised; he did not lose consciousness and was able to resume his work, nor did he make any official complaint. Six weeks later he had a sudden seizure of difficulty in articulation and right hemiparesis; he then entered a claim for incapacity, stating that since the injury he had more or less continually suffered from headaches. On examination he was found to have loss of knee jerks, Romberg's sign, and some anæsthesia. The diagnosis made was therefore early tabes, syphilis and cerebral thrombosis following specific arteritis.

We may admit the truth of the plaintiff's evidence, yet the causes of headache are many and often obscure, and their recurrence is far from convincing evidence that an injury to the body which did not include the head, which was not attended by loss of consciousness, and which did not incapacitate for work, was the cause of an aggravation of a specific organic change in the blood vessels of the brain, or that it was responsible for a lowering of the blood pressure after an

interval of six weeks sufficient to be a factor in permitting thrombosis to occur.

As a contrast, in the two following cases, by Mendel, the premonitory symptoms were of such a kind as to be explicable by definite functional disturbance of the brain. Thus:—

A man, æt. 34, addicted to abuse of alcohol, with arterio-sclerosis, sustained a severe injury to left shoulder and back. The next and following days he complained of numbness and tingling down the left side of the body; three weeks later sudden left hemiplegia.

A man, æt. 60, suffered from arterio-sclerosis, previous health good. Severe injury to left frontal bone and tearing of the temporal artery. The same night and the next day he slept very heavily, and seemed confused on the following day. He was, however, able to continue his work. Three days later he suddenly developed weakness of the left arm and leg. Mendel found he had a crossed hemiplegia, right face and left arm and leg, and diagnosed a pontine hæmorrhage.

SUMMARY.

The term traumatic late apoplexy must be held to include any cerebral seizure the result of injury at some previous time, whether the seizure was due to hæmorrhage or thrombosis, or whether it is apoplectiform in the classical sense of the word or not.

In forming a judgment upon the question of the causal relationship between injury and delayed cerebral hæmorrhage or thrombosis, it is necessary, then, to consider the following circumstances:—

1. The previous health.
2. Age; with increasing age there is increasing likelihood of the existence of arterio-sclerosis. It is admitted that injury may cause a clinically latent artero-sclerosis to show symptoms.
3. The site and severity of the injury.
4. Whether there is a continuity of symptoms between the injury and the cerebral seizure, and especially whether these symptoms can be connected with definite functional disturbance of the brain.
5. The time interval, which must not be too long, certainly not greater than a year.

A post-mortem examination may show a correspondence

between the site of the injury and underlying brain changes, or it may indicate the date of the actual lesion.

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Note.—A paper on this subject, by A. H. Miller (*Lancet*, vol. ii., 1909, p. 1339), has recently been brought to my notice.

A CASE OF PERIODIC UNILATERAL OPHTHALMOPLÉGIA.

By W. B. WARRINGTON, M.D., F.R.C.P.

SARAH W., æt. 6; her mother, æt. 27, a healthy woman. The patient was the first-born child; a second died aged eleven months, in convulsions. There were no miscarriages. The father died three years ago from phthisis.

The child was a healthy baby and had no illnesses until the age of twelve months. There was then a violent attack of vomiting, which continued for about a week. The child appeared very ill, and towards the end of the week the mother noticed that the left eyelid was drooping. The duration of the first attack appears to have been about a week; the recovery of the ptosis occurred.

The second attack occurred about one month later, and was of a similar kind.

Similar attacks occurred about every two months; during them the child was ill and had to be kept in bed. As she got older she complained of severe pain over the left side of the forehead. The pain was always in the same side. The mother says that these attacks of pain, vomiting, and palsy of the eye

muscles, "drooping of the lid and turning outwards," came on with great regularity.

When the child was four years of age she was first seen by Mr A. Nimmo Walker of the St Paul's Eye Hospital. Shortly after an attack he found complete palsy of the external eye muscles of the left eye, with ptosis: the pupil, however, reacted normally, though slightly larger than its fellow of the opposite eye.

Later on he saw the child again; the muscular palsy, with the exception of the internal rectus paralysis and slight palsy of the elevator of the eyelid, had disappeared.

Mr Walker saw the child several times, both during the attacks of palsy and in the intervals. There was never complete recovery of the eye palsy.

On 7th February of this year, after a severe attack of vomiting and pain over the left frontal region, the child was brought under my care. The mother said the last attack was in August, and that this had been the longest free interval. There was complete palsy of the left third nerve with the exception of the internal eye muscle. The left pupil was, however, slightly larger than the right. The ophthalmic division of the fifth was unaffected and no other signs of nervous or general disease discovered. The optic discs were normal on all the occasions they were examined.

The child was at first very peevish and irritable, and the mother said that vomiting and pain in the head had just ceased. The palsy gradually became less, and on 7th March there remained only slight ptosis and paralysis of the internal rectus. No specific treatment was adopted.

The case seems to be one of periodic oculomotor paralysis.

A most exhaustive discussion on the nature and pathology of these and allied conditions was published by Plavec in the *Deut. Zeit. für Nervenheilkunde*, Vol. xxxii., 1907, p. 183, and a short abstract of this paper appeared in this journal for the same year.

Clinically there appears to be a clear distinction between periodic ocular palsy and a recurrent form. The periodic form always begins early in life, is characterised by regularity in the attacks, by partial or complete recovery in the intervals, or by a gradual greater and greater residual palsy, until complete

paralysis exists. It is not accompanied by other manifestations of nervous disease.

In all these particulars it differs from a simple recurrent palsy of the third nerve, which is also due to some known gross lesion, whereas the cause of the true periodic disease is more hypothetical.

Plavec concludes that both the ordinary and the ophthalmoplegic migraine are due to a swelling of the hypophysis, that ordinary megrim is due to an active hyperæmia, ophthalmoplegic megrim to a venous hyperæmia, conditioned by a dislocation or deformity of the hypophysis.

This anatomical deformity is congenital or acquired. The hypophysis swelling in the first place presses on the sympathetic, and this accounts for the headache and vomiting; if there is the local dislocation, the swollen hypophysis presses upon the dura mater of the cavernous sinus and causes third nerve palsy.

Abstracts

ANATOMY.

SOME PROBLEMS RELATING TO THE EVOLUTION OF THE

(246) **BRAIN.** G. ELLIOT SMITH, *Lancet*, 1910, Vol. i., pp. 1, 147, and 221.

THESE lectures, which were delivered before the Royal College of Surgeons, are the most concise and valuable recent review we possess on the evolution of the brain; they contain such a wealth of new facts and of reasoning that it is impossible to reproduce more than their main features in an abstract.

The lecturer's main object was to "elucidate the differences in the structure of the nervous mechanisms of the animals examined by the comparative psychologist, and thus point a way towards an adequate explanation of their varying reactions and their different potentialities for mental processes," and "not only to provide the physiologist and the psychologist with this essential information, but also to suggest new subjects for investigation and new lines of attack." The first lecture is devoted largely to an historical review of the early controversies that unhappily complicated the study of comparative cerebral anatomy in England, but it brings

into clear light many of the fundamental points in the evolution of the brain, and the difficulties that errors in their conception have occasioned.

The first great step was made by Owen, who pointed out that the corpus callosum is absent in the marsupials; this view, though vigorously attacked by Flower and others, has been fully confirmed by Symington and Elliot Smith, who have also shown that in this class the dorsal cerebral commissure derives its fibres wholly from the hippocampi. The cortical areas which it connects must be consequently regarded as hippocampal. And as Osborn showed that the dorsal commissure of the marsupial brain is the homologue of a certain commissure in the brain of reptiles, birds, and amphibians, the cortex with which it is connected in these lower orders must be regarded as hippocampal. This is one of the fundamental facts on which the lecturer's study of the comparative anatomy of the brain is based.

In all mammals the cerebral cortex is fringed along the whole of its mesial edge by some representative of a hippocampal formation; this fact suggests that the hippocampus is a fundamental feature in the architecture of the cerebrum throughout the vertebrata. Intimately connected with the hippocampus is that mass of grey matter in front of the anterior commissure which Huxley called the septal area; Elliot Smith proposes for it the name paraterminal body; the septum lucidum is only its attenuated upper portion. It seems to stand in the same relation to the hippocampus as the corpus striatum to the rest of the cortex, and in all vertebrates it forms the matrix for the fibres passing to it.

The key to the study of the evolution of the brain must be evidently sought in the reptilian nervous system. The cortex of a typical reptile is easily divisible into a dorso-mesial, a dorsal and a lateral portion, and it is only the former that is connected with the dorsal commissure and must be consequently regarded as hippocampal. But if it be admitted that in the reptilian brain the mesial portion of the cortex which adjoins the paraterminal body is hippocampal, the question arises, How much of the whole pallium is hippocampal and how far is it specialised in this class? As the lateral cortex receives fibres directly from the lateral olfactory tract, it is evidently a homologue of the lobus pyriformis. The homology of the dorsal cortex is interesting, as Edinger has described it as a primitive neo-pallium; Elliot Smith, on the other hand, believes that the neo-pallium is not represented in reptiles, and homologises the dorsal cortex with the subiculum, which represents a transition between the hippocampus and the true neo-pallium. Consequently the hippocampus is limited to the dorso-mesial cortex. Edinger and Kappers believe that part of this portion is already in the reptiles differentiated into a fascia

dentata, but Elliot Smith maintains that though there may be some histological differentiation of its elements, there is no morphological separation as in the mammals into a fascia dentata, the receptive portion, and a hippocampus proper. Thus in the reptiles the pallium contains a hippocampus, a subiculum and a pyriform lobe.

Having attained these conclusions, he passes to outline the chief phases in the evolution of the pallium. In the lowest vertebrates, as in the larval lamprey (*Ammocoetes*) direct olfactory fibres pass to all portions of the brain, so that this is really only a homologue of the tuberculum olfactorium, but in the adult (*Petromyzon*) certain olfactory fibres reach the cortex indirectly and thus characterise a hippocampus. In the fishes the hippocampal cortex is better developed, and a portion of the lateral cortex, which receives fibres from the lateral olfactory tract, forms a rudiment of the lobus pyriformis. In the reptilian brain the tuberculum olfactorium is relatively smaller, while the pallium has increased in size and become further specialised. In the lowest mammalian brain new centres are called into being by the admission of new sensory tracts, conveying visual, tactile and other impressions to the hemisphere. These new centres develop in the dorsal cortex near the pallio-striate junction, and constitute the neo-pallium. All its afferent fibres come from the thalamus, and, according to the author, in the primitive mammalian brain its centres reproduce in their arrangement the topographical relationships of the thalamic nuclei. The primary sensory centres are gradually separated as we ascend the mammalian line by projection or association centres developed in connection with them, and thus the pallium is built up to become the organ of associative memories.

The last part of the lectures is devoted to a consideration of the laws that determine the formation of the cerebral sulci, and the difficulties and the possible errors in determining their homologies.

GORDON HOLMES.

A NEW ASSOCIATION FIBRE TRACT IN THE CEREBRUM.

(247) **WITH REMARKS ON THE FIBRE-TRACT DISSECTING METHOD OF STUDYING THE BRAIN.** E. J. CURRAN (Harvard), *Journ. Comp. Neurol. and Psychol.*, Dec. 1909, Vol. xix., p. 645.

THE tract was discovered and its connections were made out by the "Fibre-tract dissecting method" described by the author, and it has been named by him the *Fasciculus occipito-frontalis inferior*. It lies at a much lower level than the occipito-frontal

fasciculus described by Dejerine, and therefore the two bundles cannot be confused.

The tract connects the frontal lobe with the occipital lobe, and to a lesser extent with the parietal and temporal lobes also. It is most distinct where it lies in relation to the lower part of the outer surface of the lenticular nucleus and the external capsule. Here it is in the form of an isolated, compact, rounded bundle about quarter of an inch in diameter. In front and behind it spreads out like a fan, but from the level of the anterior part of the Island of Reil to the end of the posterior horn of the lateral ventricle it has definite relations with surrounding structures.

Where it is in relation to the lenticular nucleus it lies on a bed formed by the fasciculus uncinatus, the anterior commissure, and the temporal part of the corona radiata, which separate it from the roof of the descending horn of the lateral ventricle. Its lower fibres are partly covered by the fasciculus uncinatus. External to it is the Island of Reil. The claustrum is above it, and fibres of the external capsule separate it from the lenticular nucleus.

In front of the lenticular nucleus its fibres are soon lost amongst those of the external capsule and of the corona radiata which accompany them to the outer surface of the frontal lobe.

Behind the lenticular nucleus it lies on the optic radiation, and it is covered by various association tracts in this region; and here much intercrossing of fibres occurs. There is, however, little transverse intercrossing of fibres except at the lower edge of the fasciculus, where it is pierced by the tapetum.

Figures of four dissections and of three sections conclude the communication.

E. B. JAMIESON.

ON THE SEGMENTAL STRUCTURE OF THE MOTOR NERVE-

(248) **PLEXUS.** By E. S. GOODRICH, *Anat. Anz.*, März 12, 1910, S. 109.

IN 1906 the author endeavoured to show that the four radial fin-muscles of Elasmobranchs are supplied by the one spinal nerve belonging to the myotome from which they arose. This was denied by Braus, who held that a single nerve may supply six or seven radial muscles. Last December the author carried out further experiments, which he describes, and found that strict metamerism is not maintained, but that overlapping and irregularity do not exist to the extent indicated by Braus. Stimulation of each nerve was responded to by at least two dorsal and two ventral muscles, but usually three pairs of muscles responded to both electrical and mechanical stimulus,

and that appears to be the normal number supplied. Only three times did four pairs of muscles respond, but in these cases mechanical stimulation did not produce this result. The mixing of nerves occurs in most cases only in one muscle in front and behind. This arrangement is illustrated by a diagram.

E. B. JAMIESON.

THE TECHNIQUE OF PREPARING MICROSCOPICAL SECTIONS

(249) **THROUGH BOTH CEREBRAL HEMISPHERES.** (*Zur Technik der mikroskopischen Schnitte durch beide Gehirnhemisphären.*)

Dr GIULIO BOUVICINI, *Zeitschrift für Wissenschaftliche Mikroskopie*, Bd. xxvi., Heft 3, p. 410.

THE author describes a new method of mordanting large brain sections with chrome salts, his object being to curtail the time necessary in preparing tissues for Weigert's medullated sheath stain. Weigert's potassium bichromate-chromium fluoride solution and the cupric acetate-chromium fluoride solution were found to be available only for thin sections. An experience of the technique employed in dyeing led to the conclusion that chromium-sulphate with potassium-bichromate gave off the chrome to the medullated sheaths much more rapidly than potassium-bichromate alone, and that without increasing the brittleness of the tissue. The best results were obtained with the following formula:—

R7	Potassium bichromate	.	.	4.0
	Chrom. sulfuric (Merk)	.	.	2.5
	Aq. destill.	.	.	100 – filter.

The addition of glacial acetic acid, up to 5 per cent., causes a more rapid penetration of the chrome salts. The tissues are to be kept in the dark at room temperature and the fluid renewed weekly. Pieces of the spinal cord were found to be sufficiently mordanted and hardened in five or six days, medulla or pons in twelve or fourteen days, and sections through the entire cerebrum, of a thickness of 2 cm., in two months. Prolonged immersion in this solution causes brittleness, and it is advisable later to dilute the solution with distilled water or with 10 per cent. formalin solution.

To render the brain of a sufficient consistence to cut it into parallel sections, the ventricles are injected with 10 per cent. formalin solution (or with the chrome solution with the addition of 10 per cent. formalin), and the brain is then left in 10 per cent. formalin for eight or ten days. The author describes a new microtome with a special mechanism to facilitate the cutting of

sections through the entire brain in any desired direction: to the sliding carrier a millimetre scale is attached. The large brain sections are now placed in the chrome solution in such a way that between each two lies a smooth glass plate covered on either side with filter-paper.

After the mordanting the sections, without being washed, are placed in alcohols of increasing concentration, into alcohol and ether, and finally into thin and thick celloidin. The microtome sections, if found to be insufficiently mordanted, may be placed in the chrome solution at room temperature for two or three days, or for one day in the incubator. Weigert or Kulschitzky's hæmatoxylin solutions may be used for staining and the differentiation carried out according to Pal's method.

JAMES W. DAWSON.

NEW METHODS FOR THE INVESTIGATION OF THE CENTRAL (250) NERVOUS SYSTEM IN VERTEBRATES. (*Neue Methoden zur Untersuchungen des Zentralnervensystems der Vertebraten.*) BERNHARD RAWITZ, *Zeitschr. Wissenschaft. Mikroskopie*, Bd. xxvi., H. 3, p. 337.

IN the examination of the central nervous system of reptiles it was found that none of the ordinary staining methods, used in the investigation of the brain and spinal cord in man, were available. In this article the author draws attention to new methods of staining the nervous system by means of indulin, indamin blue, and azo-acid blue. If a special fixation—obviously a complicated one—is employed, these stains may be used in the case of all vertebrates, but the results are more successful in reptiles and fishes. After the special fixation many of the ordinary stains, *e.g.* carmine and coerulein, are unsuitable, while others, *e.g.* alum-hæmatein and polychrome-methylene-blue, wash out very readily during the differentiation and dehydration, and the author found that azo-acid blue was more simple in use and more reliable in its action than any other stain. This stain—one of the Victoria blue group—gives a metachromatic effect, possibly due to the chemical reaction of the tissues after the fixation, but the contrast seems not so well brought out in human material as in that of reptiles. These new stains have not yet been tried by the author in the investigation of pathological tissues.

JAMES W. DAWSON.

THE AFFINITY OF DEGENERATED NERVE FIBRES FOR SOME

(251) **DYES.** (*Affinità delle fibre nervose degenerato por alcuno stansze coloranti.*) LUIGI LUGIATO, *Riv. di Pat. nerv. e ment.*, Vol. xv., F. 3, p. 180.

As is well known, the method of Donaggio is supposed to depend for its efficacy on the mordant action of metallic salts on the degenerated nerve tissue.

The author, without traversing Donaggio's explanation of his method, shows that sections containing degenerated nerve fibres and fixed in Muller's fluid and coloured intensely with various stains, such as borax-carmin, carmalum, nigrosin, etc., and then subjected to decolorisation by Pal's mixture, tended to preserve their colour in the degenerated fibres, though the distinctive retention of colour was less striking than in sections treated by Donaggio's method. This retention of colour was lost a few days after mounting the sections, though its period could be somewhat increased by washing the preparations free from Pal's fluid as completely as possible.

F. GOLLA.

AN IMPROVED CEREBRAL MICROTOME. (*Über ein verbessertes*

(252) *Gehirnmikrotom.*) K. BERLINER, *Zeitschrift für Wissenschaftliche Mikroskopie*, Bd. xxvi., Heft 3, p. 378.

THIS microtome in many respects resembles the new models of the Breker immersion-microtome. The lifting of the block-carrier, however, is effected by means of an improved mechanism, the chief point of which is that the three micrometer screws act simultaneously, giving, in consequence, great stability to the microtome.

JAMES W. DAWSON.

PHYSIOLOGY.**THE PART PLAYED BY THE SENSORY PATHS IN THE**

(253) **MECHANISM OF THE RECOGNITION OF OBJECTS.** (*Le rôle du faisceau sensitif dans le mécanisme de la reconnaissance des objets.*) MAX EGGER, *Société de Neurologie de Paris*, Jan. 6, 1910.

THE question as to the interdependence of astereognosis and defect of cutaneous and deep sensibility is not yet decided. Several cases in which there was but the slightest impairment of sensibility, and marked inability to describe the shape, size, consistence, etc., of

objects, have been regarded as useless for the decision of the matter, inasmuch as this slight impairment of sensibility is admitted. Egger endeavours to show that this slight defect can be ignored, and is of no significance. He reports a case of tabes with gross defect both of cutaneous and of deep sensation, where the patient was still able to recognise all sorts of objects with the hands. Thus the problem becomes still more complicated, for *à priori* such a case ought to have had the completest astereognosis. The reporter endeavours to explain the difficulty.

S. A. K. WILSON.

RECENT RESEARCHES ON THE CEREBRAL CIRCULATION.

(254) (Quelques recherches récentes sur la circulation cérébrale.)

DURET, *L'Encéphale*, Jan. 10, 1910, p. 7.

It is very pleasant to read a contribution on this subject by Dr Duret, whose original work appeared in 1873 in the *Archives de Physiologie*, work which has become classical. Dr Duret passes in review various recent additions to our knowledge of the cerebral circulation, but it is odd that the epoch-making work of the late Dr Beevor is not even mentioned. The author points out the constancy of three cerebral anastomoses: (1) On the outer aspect of the frontal lobe, between the anterior branch of the anterior cerebral artery and the artery of the third frontal convolution, from the sylvian artery; (2) in the parietal region, between the middle branch of the anterior cerebral artery and a branch of the artery of the ascending frontal convolution; (3) in the parieto-occipital groove, between the posterior branch of the anterior cerebral artery, the third branch of the posterior cerebral artery, and a branch from the artery of the angular gyrus (sylvian). In criticising the recent work of Dr Ayer of Boston, Duret points out that while the latter denies altogether the existence of the lenticulo-optic artery, he figures it in two of his diagrams!

S. A. K. WILSON.

NEW RESEARCHES ON THE CUTANEOUS SENSIBILITY OF

(255) MAN. (Nuove ricerche sulla sensibilità cutanea dell' uomo.)

GIUSEPPE CALLIGARIS, *Riv. Speriment. di Freniatria*, Vol. xxxv., p. 73.

THE author continues the account of his researches that tend to prove that the superficies of the human skin is traversed by a system of hyperæsthetic lines running in a longitudinal and horizontal direction and crossing each other.

He now finds that such lines, while showing marked hyperæsthesia to touch, cold, and heat, and the electric current, are markedly hypoæsthetic to the vibratory sensation. It is possible, in fact, to demonstrate his lines of hyperæsthesia for thermal and painful stimuli by exploring the pallæsthetic sensibility with the tuning fork and noting the lines of hypoæsthesia to this stimulus.

By causing artificial hypersensitisation of the skin by mustard it was found possible to demonstrate the lines of hyperæsthesia with great accuracy.

If, with a transverse line of hyperæsthesia, a small electrode be applied to one extremity of the line and the skin at the other extremity be explored vertically downwards, it is found that when the moving electrode crosses the hyperæsthetic line there is not only increased sensation of pain but a sensation all along the line of hyperæsthesia like a cut from a knife.

If the hand be immersed in water connected with one electrode and the whole of the forearm be rendered previously hypersensitive by bathing in hot water, on passing down the arm a small electrode connected with the other pole of the faradic circuit which is in connection with the basin, the lines of hyperæsthesia will be felt as the electrode passes over them as if the stimulus were sweeping over the cords of a harp: the observer has given to this demonstration the name of "phenomenon of the lyre." With the aid of the manometer plethysmograph of Patrizi the passage of an electrode over the lines of hyperæsthesia previously marked by thermal hypersensibility has been shown to be attended with a marked vasomotor response.

F. GOLLA.

HAS ORIENTATION ANY INFLUENCE ON THE POWER OF

(256) **DOING WORK?** (*L'Orientazione ha influenza sul lavoro?*)

BERTOLDI, *Riv. Ital. di Neuropat. e Psichiat.*, Dec. 1909.

VON REICHENBACH and Ferè have testified to the greater facility for sleep and the greater recuperative effect that it has when the subject lies with his head to the north and feet south. Ferè also showed that there appeared to exist a real connection between the orientation of a subject and the amount of work that he could accomplish, as shown by ergographic tracings. Bertoldi, altering the method of Ferè, has found differences in the amount of work done according to the orientation of the subject, though the differences are less marked than those found by the French author. He has, however, confirmed him in his general conclusions—that is, that the work done is greatest when the subject is

orientated towards the west and diminishes with the other orientations, east, north, south, in a descending series.

These results also coincide with those of Dechatel and Varcollier, who experimented with the stenometer of Joire.

F. GOLLA.

**ON THE ELIMINATION OF NITROGEN AND PHOSPHORUS IN
(257) RABBITS AFTER THE CEREBRAL PUNCTURE OF
RICHET.** (*Sulla eliminazione dell' azoto e del fosforo per
via renale nei conigli dopo la puntura cerebrale di Richet.*,
I. BERGAMASCO, *Riv. Sper. di Freniat.*, Vol. xxxv., p. 431.

THE observations of Aronsohn and Sachs are regarded as unsatisfactory by the author, since they were conducted on animals with a nitrogen-free diet.

Repeating the experiments with rabbits on a mixed diet it was found that the puncture of Richet was in every case followed by a diminution in the excretion of nitrogen and phosphorus. It is, however, to be noted that the author makes no observations on the amount of food taken by the animals after a relatively severe operation.

F. GOLLA.

PATHOLOGY.

**ON THE PATHOLOGICAL EFFECTS OF ALCOHOLIC INTOXI-
(258) CATION ON THE CENTRAL NERVOUS SYSTEM OF
RABBITS.** (*Sulle alterazioni indotte dall' intossicazione
alcoolica nel sistema nervoso centrale dei conigli.*) GIUSEPPE
MONTESANO, *Arch. Speriment. di Freniat.*, Vol. xxxv., p. 353.

THE observations were conducted on 115 rabbits, which received by means of a sound daily doses of absolute alcohol, beginning with 3 c.c., and which were gradually augmented to arrive at a maximum dose of 24 c.c. a day. In rabbits thus poisoned with ethyl alcohol, from a quite early period of the administration of alcohol marked changes are found in the pia mater and the vessels of the nervous system. Changes are also early noted in the nerve cells and neuroglia cells.

Following alcoholic intoxication, whilst no fatty change is to be seen in the nerve cells, there is an accumulation of products of fatty degeneration in the pia, in the neuroglia cells, and in the cells of the vessel walls. A similar accumulation of fatty matter also takes place in the tunica adventitia. The lesion of the nerve

cells is of two types—sclerosis and granular degeneration; both these types and the concomitant changes in the neuroglia are present at all stages of alcoholic intoxication. Turbid swelling of the nervous elements and the presence of amœboid neuroglia cells were never noticed, even in animals killed by increasing doses of alcohol.

In a small number of cases infiltration of plasmocytes and lymphocytes was observed throughout the cerebro-spinal axis.

F. GOLLA.

PSYCHOLOGY.

ON THE ICONOGRAPHIC CONCEPTIONS INDUCED BY MUSIC.

(259) (*Sull' Audizione Musicale Iconografica.*) GIUSEPPE AYALA,
Riv. Speriment. di Freniatria, Vol. xxxv., p. 229.

AN account of a man with no musical talent and who was, in fact, unable to reproduce mentally or by humming anything beyond a simple tune, but in whom certain music evoked architectural images, some of which are drawn by the author. A very interesting discussion on synæsthetic phenomena, with an excursus into the general æsthetics of music, follows.

F. GOLLA.

CLINICAL NEUROLOGY.

REPORT OF A CASE OF CONGENITAL MUSCULAR DYSTROPHY.

(260) SCHLIVEK, *Arch. of Pediat.*, Jan. 1910, p. 34.

THIS patient was a girl aged 2 years and 3 months. The condition dated from birth, the child never having been able to properly flex the elbows or knees. The arms were held in the position of Erb's paralysis, and the muscles of the anterior part of the upper arms were soft and flabby, as also were the muscles of the thighs and legs. Skiagrams showed the bony system to be normal, and the nervous system was considered healthy, "for no lesion of the nervous system, central or peripheral, will give such a peculiar distribution of symptoms; there are no trophic disturbances, sensations are normal, and there is no reaction of degeneration." The only muscular conditions coming into consideration are congenital myatonia (Oppenheim's disease, also Thomsen's disease) and congenital muscular dystrophy, and the two forms of congenital myatonia could be excluded.

A. DINGWALL FORDYCE.

MYOTONIA IN PARKINSON'S DISEASE. JOHANNY ROUX, *Rev.* (261) *neurolog.*, Feb. 28, 1910, p. 204.

A TYPICAL (though not advanced) case of paralysis agitans. The myotonic spasm, which makes the case of interest, comes on only when the patient wishes to sit down or to turn round. It involves the muscles of the trunk, in particular the lumbosacral groups. It is not found anywhere else. It may last as long as forty seconds, rendering useless all efforts of the patient to move his lower extremities. If as he walks he meets an obstacle which necessitates his turning, he is again immobilised.

A discussion on the significance of myotonia follows.

S. A. K. WILSON.

GENERALISED HERPES. J. F. SCHAMBERG, *Journ. Amer. Med.* (262) *Assoc.*, liv., 1910, p. 532.

A MAN, aged 66, was seized with pain in the left scapular region on 25th November. On the 28th an extensive eruption covered the left scapular and pectoral regions and the inside of left arm, and on the 29th was scattered over various parts of the body. The doctor in attendance, who thought the case might be smallpox, sent for Schamberg, who found a severe herpetic eruption involving the back of the left chest in the region of the third dorsal nerve, the left anterior pectoral region, and inside of the left arm and hand. There were some scattered vesicles and ill-defined papules on the right chest, both sides of the abdomen, forearms, and legs. The forehead, scalp, and cheeks showed some small papules. The temperature was normal.

J. D. ROLLESTON.

HERPES ZOSTER WITH GENERALISED ERUPTION. (Le zona (263) avec éruption généralisée.) M. GIRARD, *Thèses de Lyon*, 1908-9, No. 111.

IN cases of this kind there is always a primary localised zoster, generalisation of the eruption occurring in successive crops. Girard has collected nine cases of generalised herpes from literature, including an original case in a man, aged 47, who in addition to right cervico-brachial herpes presented a disseminated eruption on the trunk and limbs.

J. D. ROLLESTON.

HERPES ZOSTER FOLLOWING MEASLES. (*Zona consécutive à* (264) *la rougeole.*) COUDEYRAS, *Arch. de méd. et de Pharm. milit.*, lv., 1910, p. 105.

A SOLDIER, free from any nervous taint, on the seventh day of a typical attack of measles had violent pain in the left side of the thorax. Two days later herpes appeared in the left pectoral axillary and scapular regions and along the inner surface of the left upper arm. The parts affected corresponded to the distribution of the third intercostal, musculo-spiral and lesser internal cutaneous nerves. There was almost complete cutaneous anæsthesia in the area of the eruption and for four fingers' breadths above and below it. On discharge from hospital, twenty-five days after the appearance of the herpes, the general condition was satisfactory, but there was still some pain and anæsthesia. Some muscular weakness in the left arm was also noted.

Unlike Landouzy, who regards herpes zoster as a specific infectious disease, the germ of which has not been isolated, Coudeyras thinks that zoster may be due to a variety of organisms, and that measles, like influenza, pneumonia, mumps, and syphilis, figures among the causes.

J. D. ROLLESTON.

FACIAL PARALYSIS PRODUCED IN A MONKEY BY THE (265) **VIRUS OF ACUTE POLIOMYELITIS.** (*Paralysie faciale provoquée chez le singe par le virus de la poliomyélite aiguë.*) C. LEVADITI and V. STANESCO, *C. R. de la Soc. de Biol.*, lxxviii., 1910, p. 264.

A *macacus cynomolgus* was inoculated in the brain and peritoneal cavity with an emulsion of the cord of an infected monkey. Nine days later it developed typical facial paralysis, of which a striking photograph is given, and more or less complete paralysis of the oculo-motor muscles. The same evening paresis of the lower limbs developed, and on the following day the paralysis was generalised. The animal was killed, and characteristic changes were found in the facial nuclei and lumbar segment.

J. D. ROLLESTON.

PARALYSIS FOLLOWING RELAPSES AND SECOND ATTACKS (266) **OF DIPHTHERIA.** J. D. ROLLESTON, *Journ. Nerv. and Ment. Dis.*, March 1910, p. 164.

THE case recently recorded by Coulter in the *Journal of Nervous and Mental Disease* (v. Review, 1909, p. 541) of a second attack of diphtheritic paralysis after an interval of two years induced the

writer to record the results of his own experience. He found that among 1600 cases of diphtheria, 27, or 1·6 per cent., had relapses which were separated from the initial angina by intervals varying from three to fourteen weeks. Two of the 27 had palatal and ocular palsies after the primary attack, but none showed any paralysis after the relapse. Another 36 cases had second attacks of diphtheria, between which and the first attack were periods ranging from three months to fourteen years. One case had paralysis after the first attack, and another three after their second attack. In only one patient were both attacks followed by paralysis. The first illness was one of mild diphtheria, for which no antitoxin was given and only local treatment employed. Generalised paralysis developed in convalescence, necessitating detention in hospital for four months. Six years later the patient was admitted with a more severe angina than on the first occasion on the third day of the disease, and received 12,000 units of antitoxin subcutaneously. Ciliary palsy developed on the thirty-second day, and lasted till the forty-fifth. No other paralysis occurred, and the knee and ankle jerks remained active during the patient's forty-seven days' stay in hospital.

The absence of paralysis after relapses and their occasional occurrence after second attacks are attributed to the invariably mild character of the former, due to the immunity conferred by the recent attack and the initial dose of antitoxin. Only four other cases of second attacks of diphtheritic paralysis are mentioned in literature, but in none of these was the paralysis generalised on both occasions, as in Coulter's case.

Tables illustrating the frequency and severity of paralysis according to the day of disease on which treatment was started, both before and after the introduction of antitoxin, clearly show that in the pre-antitoxin era early treatment had little effect on the incidence of the paralysis. On the other hand, the early employment of serotherapy is the best prophylactic of paralysis.

AUTHOR'S ABSTRACT.

RECENT OBSERVATIONS ON ACUTE POLIOENCEPHALITIS.

(267) BATTEN, *Clin. Journ.*, Feb. 23, 1910, p. 305.

THE OCCURRENCE OF INFANTILE SPINAL PARALYSIS IN

(268) **VORPOMMERN.** (Das Auftreten der spinalen Kinderlähmung (Heine-Medinsche Krankheit) in Vorpommern.) PEIPER, *D. med. Wchnschr.*, Nr. 9, 1910, S. 398.

EXPERIMENTAL EPIDEMIC POLIOMYELITIS. FLEXNER and

(269) LEWIS, *Arch. of Pediat.*, Feb. 1910, p. 93.

IMMUNITY TO THE VIRUS OF EPIDEMIC INFANTILE

(270) **PARALYSIS.** (Ueber Immunität und Immunisierung gegen

das Virus der epidemischen Kinderlähmung.) RÖMER und JOSEPH, *Münch. med. Wchnschr.*, Marz 8 und 15, 1910, Sn. 520, 568.

BATTEN, in concluding his article, gives the following as the most important facts that have been discovered during the year 1909:—

- (1) The disease is transmissible to monkeys.
- (2) It is transmissible from monkey to monkey.
- (3) The virus is not killed by glycerination, and it will pass the finest filter.
- (4) There is no organism visible by our present means of staining or microscopical power.

Peiper describes an outbreak in epidemic form of the condition in Vorpommern in the autumn of 1909.

Flexner and Lewis discuss in general terms the experimental method of studying the question, their account being based on notes previously published by them in the *Journal of the American Medical Association*.

Römer and Joseph, from experiments on monkeys, find that experimental infection with the virus of poliomyelitis, which produces no clinical symptoms, is yet capable of producing immunity against succeeding doses of the virus which are fatal to controls.

They consider that they have ground for believing that in principle it is possible to produce an efficacious antipoliomyelitis serum.

A. DINGWALL FORDYCE.

FURTHER STUDIES OF ACUTE POLIOMYELITIS. (A Contribution to our Knowledge of Neuronophage and Granular Cells.)
IVAR WICKMAN, *Deut. Ztschr. f. Nervenheilk.*, Bd. 38, Hft. 5-6, S. 396.

In this communication the author first describes seven new cases which he has investigated with characteristic thoroughness. They ranged from 2½ to 8 days in duration, most being of the type of a Landry's paralysis. The appearances at various levels of the nervous system are first described, one interesting point brought out being that in the medulla and pons the focal changes were most marked in the substantia reticularis, but also affected other parts, without, however, any special predilection for the motor zone, in which the ganglion cells appeared either normal or only slightly changed.

A long consideration of the question of the small round cells then follows, and here his 2½-day case was most instructive. In the pia the majority of the cells are lymphocytic, but there are

also a fair number of polyblasts (Maximow) and smaller numbers of Maximow's large lymphocytes or vesicular polyblasts, polynuclear leucocytes, connective-tissue cells and plasma cells. Traced inwards from the pia, the same types of cells are found; near the periphery the lymphocytes are in a majority, but further in there is great variation in the proportion between the lymphocytes and polyblasts, greater variety in size and shape, and transition forms of every sort. The perivascular and interstitial infiltrations again show the same cells, but as a rule the polyblasts predominate, varying much in size and shape, and often containing inclusions such as leucocytes. The glia cells in one case showed slight proliferation.

Neuronophagy.—This is more fully described than it has been before from a human case—in fact, it has hardly been recognised before, because as a rule the process is over before the material is available for study, it being very rapid. At its height two kinds of cells share in the process: (1) polynuclear leucocytes, (2) polyblasts. Where the ganglion cells are still in evidence the former will be found inside them, the latter surrounding them and frequently containing leucocytes and cell debris. They seemingly play different rôles, the leucocytes appearing first and by some ferment rendering the ganglion cells accessible for absorption by the polyblasts, which alone act as neuronophages. (In the bulb where leucocytes are rare, neuronophagy is exceptional.) In later stages plasma cells appear among the polyblasts and the leucocytes disappear. Neuronophages are also found in adjacent tissues, some of these having wandered there after absorption of the ganglion cells, others being probably engaged in absorption of degenerated nerve fibres. In the final stage there is merely an accumulation of round cells in the cavity where the ganglion cell formerly lay—many of them now being plasma cells. The vacuolated polyblasts are in the tissues and collected around the smaller vessels and are now typical granular cells.

Origin of the Polyblasts.—In acute poliomyelitis there are three possible sources: (1) Glia cells. The larger glia cells do not come into consideration; the so-called small glia cells may be a possible source; the nature of these is much contested; they may be identical with the passive wander-cells of the subcutaneous and other tissues which are impossible to distinguish from lymphocytes. The presence of polyblasts in the pia is also against their glial origin. (2) Polynuclear leucocytes. Many of the polyblasts closely resemble these, but their nuclei contain less chromatin, are reticulated, and are seldom definitely lobed. Their protoplasm stains differently with methyl-green-pyronin (polyblasts pink, leucocytes unstained) and with the triacid stain (leucocytes showing neutrophile granules). Another argument against their identity

is their distinctive functions in neuronophagy. (3) Emigrated lymphocytes. That most of the round cells are lymphocytes and polyblasts derived from these and from passive wander-cells is the conclusion arrived at by the author, practically by a process of exclusion. His summing up is as follows:—I consider acute poliomyelitis an acute infiltrative, non-suppurative inflammation of lymphocytic type. As in these processes elsewhere, there appears first an emigration of polynuclear leucocytes, inferior in number to the mononuclear elements, to which they soon give place altogether.

On the question of the *pathogenesis*, he points out that although his description of neuronophagy might point to its being a primary cell degeneration with secondary inflammation, it is not really so. This is shown by the pronounced vascular changes—the fact that it is not a system lesion, and that it does not attack solely the nervous system (similar round-cell accumulations were found in the sub-pericardial fat in one case).

According to the author's view, it appears clinically as a system lesion, with rare exceptions, simply on account of the abundant vascularisation of the anterior horns.

The remainder of the paper consists in a summing up of the points in favour of the lymphogenous nature of the affection as against a haematogenous one.

J. H. HARVEY PIRIE.

EPIDEMIC POLIOMYELITIS. (Report of the Collective Investigation Committee on the New York Epidemic of 1907.) New York, 1910.

THIS volume, which forms No. 6 of the Nervous and Mental Disease Monograph Series, embodies the conclusions come to by a number of well-known American neurologists on the large New York epidemic of 1907. Although, from its very nature, the investigation was by no means exhaustive, yet some interesting points have been brought out, and we have here focussed the new views regarding epidemic poliomyelitis, views very different from the old-time conception of infantile spinal paralysis. Negroes appeared to be almost exempt. The disease was infectious, its communicability being about as much as that of epidemic cerebro-spinal meningitis, but the path of infection could not be determined. Amongst the early symptoms it is noteworthy that skin eruptions were fairly common. The general symptoms are sometimes as prominent as are those of paralysis; it is a more fatal disease than was supposed, and yet recoveries are more common than was suspected. The spinal type was the predominating form, the other groups established by Wickman representing only

rare varieties, and we are glad to see that they do not think there is sufficient warrant for adopting the name Heine-Medin disease. Meningeal symptoms were unusually common in the earlier stages, most of the fatal cases had bulbar involvement, neuritic forms were seen only in a few instances, and there were no cases of spread of the lesion to the cerebral cortex.

The part dealing with experimental poliomyelitis by Flexner and Lewis has already been published more fully in various separate articles. Dr Strauss gives a good account of the histopathology based on eight fatal cases. His observations differ from Wickman's in some small points, but not in any essentials. With regard to treatment it cannot be said that anything new has been learnt; so few data, indeed, did the committee obtain that they have thought it advisable to give a general expression of their own views.

J. H. HARVEY PIRIE.

INFANTILE PARALYSIS. (*Die spinale Kinderlähmung.*) F. (273) KRAMER (of Breslau), *Med. Klinik*, 1909, p. 1959.

In this clinical lecture Kramer states that during the Breslau epidemic diarrhoea and vomiting were exceptional during the acute stage, whereas obstinate constipation was very frequent.

J. D. ROLLESTON.

AN UNUSUAL CASE OF PNEUMOCOCCAL MENINGITIS FOLLOWING TRAUMA. ERNEST GLYNN and R. E. KELLY, *Liverpool Med.-Chir. Journ.*, Jan. 1910, p. 124.

A BOY, aged 17, was struck on 2nd September by a baulk of timber on the forehead. He became unconscious and had epistaxis. On 10th September he played football. On 23rd September he began to suffer from headache, which became intense. On 25th September there was slight head retraction and a positive Kernig. On the 26th the cerebro-spinal fluid was turbid. He died on the 28th.

Examination of the cerebro-spinal fluid showed many polymorphonuclear leucocytes containing numerous Gram-positive intracellular diplococci, often from 15 to 20 pairs in one cell. These organisms were proved by inoculation into mice and by cultivation to be pneumococci (in pure culture).

Post-mortem examination showed extensive sub-periosteal extravasation of blood over the anterior fossa, and a "v"-shaped fracture of the frontal bone which opened into the cribriform plate and the left orbit. There was suppurative meningitis of the cord,

and the base of the brain only. The lungs were normal. The case is remarkable for—

1. The complete absence of external signs of violence indicating a fracture of the anterior fossa, and the long latent period before the meningitis.
2. The position of the meningeal exudate, and the extensive phagocytosis of the pneumococci, which simulated infection with the diplococcus intracellularis of Wieschelbaum. It was of the utmost diagnostic importance that the cocci were Gram-positive.

Note.—There was no vertical meningitis, it was only basal.

AUTHORS' ABSTRACT.

TWO CASES OF MENINGOCOCCUS SEPTICÆMIA WITHOUT
 (275) **CEREBRO-SPINAL MENINGITIS.** (*Deux cas de méningo-coccémie sans méningite cérébro-spinale.*) MONZIOLS and LOISELEUR, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, xxix., 1910, p. 155.

CASE 1.—Soldier, aged 36. On the sixth day of an attack of pneumonia, complicated by myocarditis, meningococci were found in the blood. A pleural effusion subsequently occurred, in which meningococci were also present, as well as numerous polymorpho-nuclears. There were no meningeal symptoms, and the cerebro-spinal fluid was normal. Serum treatment was started on the eighth day, 150 c.c. in all of Dopter's serum being given, one third of which was injected into the pleura and the rest subcutaneously. Each injection was followed by considerable improvement. When seen six months later the patient's general condition was good, but the myocardium was still affected. This is the first case published of intrapleural injection of antimeningococcic serum.

CASE 2.—Soldier, aged 22. The only morbid symptom was intermittent pyrexia. The cerebro-spinal fluid was normal. Blood withdrawn during a febrile attack showed meningococci. Recovery took place without serum treatment. J. D. ROLLESTON.

A CASE OF EPIDEMIC CEREBRO-SPINAL MENINGITIS,
 (276) **TREATED BY FLEXNER AND JOBLING'S SERUM; RECOVERY.** J. J. WEAVER and N. P. MARSH, *Lancet*, April 16, 1910, p. 1068.

A CASE of moderately severe meningococcic meningitis in a girl of 16, diagnosed on the tenth day of the disease, treated at once by

removal of 30 c.c. cerebro-spinal fluid and injection of an equal amount of serum. This was repeated on each of the next four days, and then, after one day's intermission, a final dose of 15 c.c. was injected on the sixth day. There was immediate improvement following the first injection, going on to complete recovery.

J. H. HARVEY PIRIE.

PROPHYLAXIS OF EPIDEMIC CEREBRO-SPINAL MENINGITIS

(277) **AND DISINFECTION OF THE NASO-PHARYNX.** (Prophylaxie de la méningite cérébro-spinale épidémique et désinfection du rhino-pharynx.) G. E. SCHNEIDER, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, xxix., 1910, p. 192.

THE meningococcus may lodge in the naso-pharynx of healthy persons, who are thus more dangerous to the community than the isolated patient, and persist in spite of treatment for a variable time—on the average, ten days. After employing the inhalations of iodine, guaiacol, and thymol recommended by Vincent and Bellot (v. *Review*, 1909, p. 742) Schneider found that the naso-pharynx of "carrier" cases was free from meningococci, though other organisms were still present.

J. D. ROLLESTON.

LUMBAR PUNCTURE IN MENINGITIS AND ALLIED CON-

(278) **DITIONS.** G. STIRLING LANDON, *Lancet*, April 16, 1910, p. 1056.

ALTHOUGH no very new points are brought out in this paper, it is a good clinical study of the cerebro-spinal fluid, based on the examination of a large number of cases in children, fifty of them suffering from meningitis, about half of these being tuberculous. An extensive bibliography is also given. The cytology and bacteriology are the most important clinical characters. If the leucocytosis is a polymorph one the microbic infection is probably other than a tubercular one, although this rule is not without exception. The most conclusive of all positive results is obtained by bacteriological examination, and careful searching will often yield positive results—negative ones are of little value. It is of most value for diagnosis, therapeutically it has been rather disappointing.

J. H. HARVEY PIRIE.

**ON THE QUESTION OF ACUTE MULTIPLE SCLEROSIS AND
(279) DISSEMINATED ENCEPHALO-MYELITIS IN CHILD-
HOOD.** H. SCHLESINGER, *Arch. a. d. Neurol. Institut. a. d.
Wien. Univ.*, Bd. xvii., Hft. 3, S. 410.

A CASE of a seven-year-old boy, probably hereditarily syphilitic, who, two weeks after an attack of measles, began to complain of disturbance of vision. The disease then progressed rapidly, except for short remissions, often by jumps. There developed spastic paralysis in the lower extremities, later, marked paresis and ataxia in the upper; very pronounced disturbances of sensibility in the lower half of the body, rectal and bladder troubles, and priapism. The initial optic neuritis went on to complete blindness, the speech was scanning and, towards the end, scarcely understandable. He became quite deaf. Eye and face muscles showed paralyse. He became demented, and died ten months after the onset of the disease. There was no fever except with some intercurrent affections.

Microscopical examination revealed the presence of numerous larger and smaller foci throughout the whole central nervous system. They were of three types: (1) In these the nerve substance had almost entirely disappeared, only an occasional naked axis cylinder remaining. There were abundant fat granule cells, the adventitial sheath of the vessels in the neighbourhood being packed with them; the glia in many of these was markedly proliferated. (2) Typical patches of ordinary disseminated sclerosis, occurring all over the brain and cord, often bordering directly on (1). (3) A type which the author thinks has hardly been recorded before. They also occurred scattered irregularly throughout. At first sight they were very like the typical forms, but shadow forms were found in the patches—very faintly staining sheaths (with Weigert-Pal's stain). The fibres ran their normal course across the patch and became quite normal again on emergence. Transition forms to normal fibres were found. The axis cylinders were generally normal. Both large and small fibres were affected, but it was noticeable that sometimes one set of fibres would be very much more affected than another. The author regards these foci as an intermediate stage in the development of the patches of disseminated sclerosis; different fibres having varying powers of resistance to the noxa, which gradually produces destruction of the medullary sheaths from without inwards. They correspond with typical patches in the following points:—Sharp borders, map-like configuration, often symmetrical distribution, both grey and white matter affected, ganglion cells spared, trifling secondary degeneration, disproportion between clinical and pathological findings. These and the presence of typical patches

warrant the diagnosis of sub-acute multiple sclerosis, but not a pure case, for the first group of patches described are transitional in type to disseminated encephalomyelitis.

J. H. HARVEY PIRIE.

PSEUDO-TUMEURS CÉRÉBRALES ET MÉNINGITE SÉREUSE
(280) **VENTRICULAIRE.** F. RAYMOND, *Presse Med.*, March 9, 1910,
p. 168.

PROF. RAYMOND relates two cases of this disorder.

I. Woman, æt. 39, suffered from hereditary syphilis. At the age of twenty-three, i.e. in 1894, attacked with severe pains in the vertebral column, a fever of 102 degs., headache, convulsions, delirium and somnolence.

Ten days after admission to hospital there was complete amaurosis.

In about two months the patient had recovered sufficiently to leave the hospital.

The diagnosis was either tumour cerebri or meningitis.

The further history was that the mental dullness only slowly disappeared and that headaches were frequent, and that defect of vision again became evident. In 1895 ophthalmoscopic examination showed a compression optic atrophy.

Mercurial treatment was useless.

Three or four years later all the symptoms except the defective vision had disappeared, but the size of the head had increased.

Later, tremors and exophthalmos developed.

In 1909 the patient was found to have a distinct goitre, exophthalmos, and complete right blindness, with diminution of vision in the left side. The ophthalmoscope showed on the left side optic atrophy, and on the right atrophy with signs of old neuritis.

II. Female, æt. 35. When twenty-five, attacked with violent headache, vomiting, and hallucinations. Fifteen days later she lost the vision of the left eye for some hours, and the next day that of the right eye. She then became delirious. This rapidly passed off, but the headache continued.

At the end of two years the patient was well, except for the loss of vision.

Now, after ten years, optic atrophy is the only symptom.

Raymond discusses these cases, which he considers are examples of Quinke's serous meningitis. He points out that whilst Quinke thought that this was due to a non-infective inflammation of the pia mater and ependyma, Hutinel, Netter, and Mya have

shown that really there is an invasion by organisms of low virulence.

He divides the cases into three groups:

1. Acute. Resembling meningitis.
2. Essentially chronic. These can continue for years, and may even be mistaken for neurasthenia.
3. Sub-acute, the symptoms lasting for some months and resembling those of cerebral tumour.

The diagnosis is made chiefly on the history and a recognition of the fact that all the symptoms may be explained on the hypothesis of increased intracranial pressure.

For treatment he recommends mercury, and for the relief of intra-cranial tension repeated lumbar puncture, ventricular puncture, or a decompressive operation on the skull.

W. B. WARRINGTON.

A CASE OF PONTINE TUMOUR PRODUCING DISSOCIATED

(281) **HEMI-ANÆSTHESIA.** W. P. HERRINGHAM and C. M. HINDS
HOWELL, *Lancet*, Jan. 29, 1910, p. 290.

THE patient, a man aged 36 years, complained a year before coming under observation of neuralgia in the left fifth nerve. Six months later he developed left facial paralysis, ataxy, and diplopia. At the same time occipital headache and vomiting occurred. Shortly before death optic neuritis appeared. His sensory symptoms were remarkable. There was loss of tactile sensation (cotton wool) in the distribution of the left fifth cranial nerve, but no loss to pain (pin-prick), heat, or cold in this area. On the right side there was no loss to tactile sensation at all, but complete hemi-analgesia and hemi-thermo-anæsthesia, which included the area of the right fifth nerve. With regard to the cranial nerves, there was weakness of the left motor fifth root and of the left sixth nerve. Hearing was poor both right and left. There was no weakness in the palate, vocal cords, or tongue; no weakness of the limbs; exaggeration of the right knee jerk and right plantar extensor. Post-mortem a tumour was found lying in the position of the left middle cerebellar peduncle, with a cystic portion which had distended the fourth ventricle. The left fifth nerve passed through the cystic part of the growth. The solid part of the growth compressed and infiltrated the left lateral aspect of the pons, but had not reached so far mesialwards as the fibres of the fillet.

AUTHORS' ABSTRACT.

A CONTRIBUTION TO OUR KNOWLEDGE OF TUMOURS OF THE
(282) **CEREBELLO-PONTINE ANGLE.** (*Zur Lehre vom Kleinhirnbrückenwinkeltumor.*) H. OPPENHEIM, *Neurol. Centralbl.*, April 1, 1910, p. 338.

OPPENHEIM remarks that although recently he has met with a number of tumours in this region, yet almost each fresh case has presented new features, while in several instances problems have been raised which were difficult to answer.

The present case is that of a man, aged 46, who manifested symptoms which seemed to clearly point to the left cerebello-pontine angle. Although there was no suggestion of syphilis, the Wassermann test was positive, and very marked improvement took place under mercury. Eventually, in spite of mercurial treatment, a relapse occurred, and additional symptoms developed, including a homolateral spastic hemi-paresis, with clonus and Babinski's sign, as well as a homolateral hemi-analgesia. The latter symptom has not, so far as the author knows, been met with in these cases. The headache was now situated in the right occipital region. A fibroma about the size of a hen's egg was removed by Krause from the left cerebello-pontine angle, which, after consultation with Ziehen, it had been decided to expose. The patient died five days later.

Post-mortem there was found a pronounced atrophy of the opposite side of the medulla and of the posterior part of the pons on this the contralateral side. The right vertebral artery lay tightly stretched across the pons at the bottom of a deep groove. The homolateral hemi-paresis, which is a symptom new to Oppenheim in tumours in this situation, may be explained by pressure against the bone, by stretching of the fibres on the contralateral side, or by interruption in conduction, a consequence of the constriction produced by the vertebral artery.

This case illustrates (1) that a positive Wassermann and even marked improvement under mercury are no certain proofs of the syphilitic nature of a cerebral neoplasm; (2) that a homolateral hemiplegia may occur and be produced in one of the ways mentioned; and (3) that although these tumours may have been in existence for a long time, and may have obtained a considerable size before the patient suffers so severely that he is willing to submit to a serious operation, an operation should be undertaken as soon as a diagnosis is made.

The author concludes with a reference to the subsequent history of two cases to which he referred in a recent paper on "The Influence of Position of the Head on Brain Symptoms" (*vide Review*, p. 185).

EDWIN BRAMWELL.

ACUTE CEREBRAL ATAXIA. DAVIDENKOF, *L'Encéphale*, Jan. 10, (283) 1910, p. 44.

THE subject of acute cerebral ataxia is so difficult and obscure, and recorded cases are so conflicting, clinically and pathologically, that the present article becomes the more interesting, although, as will be seen, it, too, is unsatisfactory.

A youth of 19 was attacked with pneumonia: a week after its onset nervous symptoms set in: gross ataxia of all the voluntary musculature, including the muscles involved in articulation and expression, with exaggeration of all the deep reflexes. Tremor of the hands and head appeared later, not merely with muscular action, but also in repose. Preservation of muscular force, of sensibility, and of pupillary reflexes. Gradual improvement of all symptoms, but sudden death two months later from a recurrence of the pneumonia. The cells of the bulbar nuclei were degenerated, as were also the cells of the cortex in various regions: the capillaries were engorged, and there was slight round-cell perivascular infiltration. There was general cerebral œdema. It will be seen that the explanation of the acute ataxia is still problematical, and when the author says it is of toxic origin we get no further. The value of the case consists in this, that no areas of disseminated myelo-encephalitis were found, to which, in other reported cases, the ataxia has been attributed.

S. A. K. WILSON.

THE QUESTION OF THE SIDE AFFECTED IN HEMIPLEGIA (284) AND IN ARTERIAL LESIONS OF THE BRAIN. ERNEST JONES, *Quart. Journ. of Med.*, April 1910, p. 233.

WRITERS upon medical topics are apt to draw conclusions regarding comparative frequency from data which will not permit of such deductions when subjected to strict mathematical scrutiny in relation to the laws of chance. Two matters have, as Dr Jones points out, separately to be considered—the total number of cases investigated and the disproportion in incidence present. “Plainly if one finds a lesion ten times as often on one side as on the other, one needs fewer absolute numbers to establish the predilection of the lesion for that side than if one finds a smaller disproportion between the two; conversely a small disproportion gains in significance as the extent of the data increases.” The application of the modern mathematical theory of probability enables us to determine the limits of coincidence in any given series of cases, and to ascertain whether some explanation other than chance is required to account for the disproportion.

Three possible explanations may be advanced to account for disproportion in any given series of cases: (1) paucity of data, in which the disproportion is due to chance; (2) selection of material in favour of one side; (3) real predilection of the lesion for that side.

The author has analysed 5281 cases of cerebral hæmorrhage, thrombosis and embolism, and hysterical hemiplegia. In 3539 of these cases the nature of the lesion was definitely determined by post-mortem examination. The conclusion he arrived at is that "with none of these conditions was any evidence obtained to indicate that either the lesion or the hemiplegia is more apt to affect one side rather than the other. The general teaching to the contrary is not founded on any critical evidence."

EDWIN BRAMWELL.

THE FREQUENT ABSENCE OF PERMANENT CONTRACTURE

(285) **IN INFANTILE HEMIPLEGIA.** (*Sur l'absence fréquente de la contracture permanente dans l'hémiplégie infantile.*) LONG, *Rev. neurol.*, Jan. 15, 1910, p. 9.

IN thirty-six cases of infantile cerebral hemiplegia only fifteen showed permanent contracture; some showed actual hypotonia of the affected muscles. No explanation is offered of the difference between infantile and adult hemiplegias. S. A. K. WILSON.

DOUBLE OCULAR HEMIPLEGIA, ETC. (*Hémiplégie oculaire*

(286) **double; abolition de tous les mouvements volontaires avec conservation des mouvements sensorio-réflexes.**) ROUX, *Rev. neurol.*, Jan. 30, 1910, p. 57.

A MAN, aged 54 years, a typical case of pseudo-bulbar palsy from double hemiplegia. Complete paralysis of eyes, face, palate, tongue, etc., for voluntary movements. The eyes, which alone appeared to be alive in the mask-like face, were constantly on the move, but it required a very brief examination to ascertain the curious fact that the patient was entirely unable to direct his gaze voluntarily in any particular direction; the movements of the eyes were reflex. The author explains the clinical facts on the notion of a double cortical oculomotor centre: one sensitivo-motor, in the ascending frontal opposite to, and partly including, the foot of second frontal convolution; the other, sensorio-motor, in the angular gyrus or visual centre somewhere. The projection fibres of the former have been interrupted by a double lesion, whereas the others are intact.

S. A. K. WILSON.

MOTOR APHASIA, ETC. (*Aphasie motrice: coexistence du signe (287) de Lichtheim-Dejerine et de paraphasie en écrivant: troubles latents de l'intelligence.*) FROMENT and MAZEL, *Rev. neurol.*, Feb. 15, 1910, p. 136.

A MAN, aged 27 years, as a result of an assault, suffered from a cranial wound on the right side, and developed motor aphasia in the course of the next twenty-four hours. When he came under observation it was found that his aphasia was of a type intermediate between Broca's aphasia and pure motor aphasia. He had neither word deafness nor word blindness; he could write correctly words which he could not pronounce, and with him the Lichtheim-Dejerine test was constantly positive. On the other hand, there was some paraphasia, which negatives a pure motor aphasia. Yet this paraphasia was the sole graphic impairment; he could write much better than he could speak. The defect of "langage intérieur" was much too slight for the case to be classified as one of Broca's aphasia. S. A. K. WILSON.

A CASE OF DYSARTHRIA, ETC. (*Un cas de dysarthrie avec cécité (288) verbale, hémianopsie, agraphie, aphasie amnésique et accès de pleurer et de rire spasmodiques; ramollissement cérébral.*) BOUCHAUD, *Rev. neurol.*, March 30, 1910, p. 337.

THE patient was aged 60 years, and his case presented the following clinical features:—Gross dysarthria, but no real motor aphasia; a certain amount of word blindness; no word deafness; complete agraphia; hemianopia, but no hemianæsthesia; no hemiplegia (double flexor response); spasmodic laughing and weeping. Pathologically, areas of softening almost entirely confined to the left hemisphere and chiefly in the distribution of the posterior cerebral artery. The frontal and rolandic convolutions were normal. The convolutions of the temporal lobes were all softened, however, and so were the superior and inferior parietal and the occipital lobe. On a horizontal section the outer and posterior part of the lenticular nucleus (putamen) was softened, and this area of degenerative change spread into the external capsule and the claustrum. The internal capsule was unaffected. On the right side the lenticular nucleus was also somewhat softened, but the surrounding structures (including the internal capsule) were intact.

The hemianopia and word blindness are explained readily enough, but it is curious that there was no word deafness, nor hemianæsthesia. The agraphia is quite easily explained by the

parietal lesion, yet the author seems surprised at finding no change in the second frontal convolution. The lesion in the lenticular zone plus the lesion in the zone of Wernicke ought to have produced, according to Marie, a complete aphasia. No case could be more characteristic of the theory, from the pathological standpoint. Clinically, however, there was nothing approaching a complete aphasia; instead, the patient was dysarthric and had some word blindness. The association of dysarthria with the lenticular area is well known, but still uncertain. The present case is of importance, inasmuch as the internal capsules were intact.

S. A. K. WILSON.

TWO CASES OF THE THALAMIC SYNDROME. (Deux observations anatomo-cliniques de syndrome thalamique.) LONG, *Rev. neurol.*, Feb. 28, 1910, p. 197.

THE first case: A man aged 70 years, with left hemiplegia rapidly improving; no ankle clonus; a flexor response. In addition, left hemianæsthesia (touch, pain and temperature), and still more marked affection of muscular sense and sense of position. Also hemiataxia and astereognosis. Paroxysmal pains on the left side. Post-mortem a softening in the retro-lenticular segment of the internal capsule, spreading into the posterior part of the outer nucleus of the optic thalamus and the central part of the pulvinar.

The second case: Slight right hemiplegia, with an extensor response for two days after the ictus, then flexor. Hemianæsthesia (cutaneous and deep sensibility), hemiataxia and hemianopia. Pains in the right arm. *Sub finem*, hemianopia and troubles of equilibration. Post-mortem, amongst other areas involved, a lesion in the nucleus externus of the optic thalamus, extending from the upper to the lower limits of the thalamus. The posterior section of the internal capsule was intact.

S. A. K. WILSON.

INTRACTABLE VOMITING OF PREGNANCY AND ITS ASSOCIATION WITH LESIONS OF THE NERVOUS SYSTEM. (Des vomissements incoercibles de la grossesse dans leurs rapports avec les lésions du système nerveux.) DUFOUR and COTTENOT, *Rev. neurol.*, Feb. 15, 1910, p. 129.

THE authors report six cases (two of their own and four from the literature) of latent cases of tabes, in each of which the first

symptom was intractable vomiting during pregnancy. They also quote twelve other cases (one personal) of intractable vomiting in pregnancy where it was associated with neuritis, and assume a neuritis of the vagus.

S. A. K. WILSON.

SYPHILIS OF THE NERVOUS SYSTEM WITHIN SIX YEARS OF

(291) **INFECTION.** HENRY HEAD, *Proc. Roy. Soc. of Med., Neurol. Section*, Vol. iii., p. 49.

THE author bases his remarks on the examination of thirty-three cases seen by himself, in which the date of infection was accurately known. The average date of the onset of nervous manifestations was two years and eight months after infection, but five cases occurred within one year of infection. The earliest period at which definite signs were discovered was three months.

In four of the cases the patients were taking mercury by the mouth in the form of pills, under the guidance of an expert, at the time the nervous manifestations appeared. A fifth case developed spinal symptoms whilst undergoing a full course of treatment at Aachen.

Details of sixteen of the cases are given, illustrating the clinical types of cerebral, spinal, and cerebro-spinal syphilis. These include three cases of syphilitic epilepsy and two cases of Brown-Sequard paralysis. Several cases of hemiplegia and paraplegia are described, and it is pointed out that the prognosis is very much better in the cases in which the onset is gradual than in those in which it is acute.

Dr Head recommends that all patients with nervous syphilis should, if possible, be put to bed, overfed, and massaged at the same time as they are treated with mercury by inunction.

A. W. FALCONER.

CEREBRAL SYPHILIS WITH MULTIPLE LESIONS : GUMMATA

(292) **OF THE CORPUS CALLOSUM.** CLAUDE and LÉVY-VALENSI, *L'Encéphale*, Jan. 10, 1910, p. 28.

THE value of the two cases here reported is diminished for a double reason—first, because no special examination for apraxia was made, and second, because of the numerous areas of disease all over both hemispheres. In the first case there were foci of softening scattered through the grey basal ganglia, the centrum ovale, and in the crus, and in addition no fewer than six gummata scattered through the hemispheres, one in the corpus callosum:

there was also a degree of meningitis. In the second case there was a gumma in the right frontal lobe and another in the corpus callosum.

S. A. K. WILSON.

SYPHILIS AND PARASYPHILIS OF THE NERVOUS SYSTEM.

(293) F. W. MOTT, *Proc. Roy. Soc. Med.*, Neurol. Section, Feb. 1910, p. 35.

MOTT's wide experience as a pathologist tends to show that the whole cerebro-spinal axis is usually, if not always, affected in syphilitic disease of the nervous system, and that all the syphilitic conditions (meningitis, arteritis, gummatous tumour) may be more or less combined in the severe and early forms of the disease.

It is possible that the cerebro-spinal meninges may be infected, like the skin, by the spirochæte of syphilis during the secondary period. In this period, lymphocytosis of the cerebro-spinal fluid is frequently present; and many cases of syphilis of the meninges can be cited where the symptoms have appeared within three months of the primary infection. If the meninges are infected, it is quite possible that the virus may remain latent until some other cause acts as a co-efficient in the production of a definite lesion with symptoms, *e.g.* trauma, as in a case recorded by Mott.

Brain syphilis is certainly more serious than spinal syphilis. Mott is not so hopeful about the cure of brain syphilis as he was ten years ago; not a few cases which he then thought cured or permanently relieved are dead or have had serious relapses.

The causal connection of tabes dorsalis and general paralysis with syphilis is now firmly established. Syphilis, acquired or congenital, is the essential cause. Yet these diseases are not really syphilitic, but an outcome of syphilis; all the facts are against the view that they may be regarded as quaternary syphilis. The riddle is still unsolved why only about 3·5 per cent. of persons infected with syphilis should suffer later from parasyphilis. The virus may vary in different cases, and some facts suggest the possibility of a certain form of virus with a neurotoxic action. But probably more important than variation of the virus is the reaction of the individual. Symptom complex = $\frac{V}{R} = \frac{\text{virus}}{\text{resistance}}$.

It is generally impossible to resolve R into all its constituents. Mott's observations on this point should be read in the original. One sentence may be quoted bearing on the location of the degeneration in different cases of parasyphilitic disease: "All those conditions which may be inherited or acquired, and which tend to active metabolism of systems, communities, and groups of neurones functionally correlated, and which, owing to those con-

ditions of stress which in one individual would cause spinal neuræsthenia, in another cerebral neuræsthenia, will, in conjunction with the stimulating effect of the syphilitic poison, cause the nerve cells to exercise an abnormal metabolic activity in the production of the side-chain molecules necessary for immunization against the toxic effects of the virus."

The amount of lymphocytosis of the cerebro-spinal fluid is an index of the activity of the disease. Lymphocytosis in tabes and general paralysis does not diminish with anti-syphilitic treatment—an important point in differentiating cases of pseudo-tabes or pseudo-general paralysis.

The Wassermann reaction has yielded most valuable results as a means of diagnosis. This result, applied to the cerebro-spinal fluid of 127 cases of insanity, was positive in 59 of 64 cases of general paralysis (the diagnosis was later confirmed post-mortem in 21 of the 59; the 5 negative cases are still alive), while it was negative in each one of 63 cases not suffering from general paralysis.

Anti-syphilitic remedies are useless, and, indeed, generally positively injurious in true tabes and general paralysis. But it is desirable to try a mercurial cure in all cases in which there are atypical characters, where the Wassermann reaction is not obtained in the cerebro-spinal fluid and the lymphocyte reaction is marked. As clinical indications of pseudo-tabic lesions are mentioned the following symptoms:—(1) Sudden onset and rapid progress of symptoms; (2) early appearance of affection after primary infection; (3) variability in the condition of the tendon reflexes, especially patellar and tendo-Achillis reflexes; (4) optic nerve lesion, causing a unilateral central scotoma; (5) marked improvement under treatment. ASHLEY W. MACKINTOSH.

**THE PRINCIPLES AND TECHNIQUE OF THE WASSERMANN
(294) AND NOGUCHI REACTIONS AND THEIR COMPARATIVE
VALUE TO THE CLINICIAN.** D. M. KAPLAN, *Amer. Journ.
Med. Sci.*, Jan. 1910.

A FULL and careful account of the principles and technique of both reactions is given.

It is pointed out that negative results in 8 or 9 per cent. of Wassermann tests with luetic sera are due to the fact that human serum contains substances capable of dissolving the red blood corpuscles of the sheep. It was partly to prevent this error that Noguchi introduced an anti-human amboceptor instead of an anti-sheep. By combining the two methods, the 8 or 9 per cent. of negative results obtained by the author, using the Wassermann

reaction alone, were reduced to 1 or 1·5 per cent. The Noguchi test, besides giving a positive reaction with all luetic sera, gave a positive reaction with 7 per cent. of negative sera, but by using both methods this error was rendered unimportant.

The author's conclusions are based on 1390 sera.

D. K. HENDERSON.

STUDIES WITH THE WASSERMANN REACTION. E. CORSON
(295) WHITE and S. V. W. LUDLUM, *Med. Record*, Dec. 25, 1909.

A COMPARATIVE study of the Wassermann reaction, the Noguchi modification (using fluid reagents), and the globulin tests of Noguchi, and Gay and Fitzgerald. There was a marked uniformity of results with all four tests.

The Noguchi modification was in most cases more sensitive than the Wassermann reaction, this increased delicacy making it give positive results in non-luetic cases (tuberculous meningitis, one case).

The most positive results with the fixation tests were given with the active secondaries, and the faintest with the treated tertiaries. The intensity of the complement fixation tests did not seem to bear any relation to the severity of the lesion.

The globulin tests were more often positive in parasyphilitic cases where the fixation tests were less constant. The Noguchi butyric acid test with cerebro-spinal fluid was positive in every case with involvement of the meninges from whatever cause, but was negative in one case of gumma of liver, where blood serum was faintly positive.

D. K. HENDERSON.

CLINICAL EXPERIENCE WITH THE WASSERMANN REACTION
(296) IN THE JOHNS HOPKINS HOSPITAL. PAUL W. CLOUGH,
Johns Hopkins Hosp. Bull., March 1910.

THE results obtained were quite in harmony with those reported elsewhere, and are summarised as follows:—

In 99 cases, where syphilis could be excluded, the reaction was negative in all. In 51 doubtful cases, in which clinically syphilis was not probable, the reaction was positive in 4; in 50, in which syphilis was probable, a positive reaction was obtained in 33, or 66 per cent. In 45 cases, which were certainly syphilitic, a positive reaction was obtained in 33, or 73 per cent. Excluding cases which had recently received thorough mercurial treatment, positive reactions were obtained in about 82 per cent. of the cases

showing active syphilitic lesions. Positive reactions were obtained in 40 per cent. of 15 cases of tabes, and in all of the 7 cases of general paralysis which were tested. D. K. HENDERSON.

**"OPTIC NEURITIS," "CHOKED DISC," OR "PAPILLOEDEMA":
(297) TREATMENT, LOCALISING VALUE, AND PATHOLOGY.**

Sir VICTOR HORSLEY, *Brit. Med. Journ.*, March 5, 1910.

A MAIN object of this paper is to adduce further evidence in support of the author's contention that in cases of cerebral tumour the changes at the optic discs are more pronounced on the side corresponding to the site of the tumour. If this view should prove on more extended observation to be well founded, then a distinct advance will have been made in the clinical diagnosis of a most important group of cases.

Sir Victor Horsley gives a table of eighteen unselected cases of cerebral tumour which had been under his care at Queen Square, and in which the situation of the tumour was determined by operation during the year 1908. Of these cases fifteen are quoted as ipsilateral—*i.e.* with optic neuritis more pronounced on the side of the lesion—one as probably ipsilateral, one as indeterminate, and one as contralateral.

The number of cases cited is, of course, too small to afford conclusive evidence on the point at issue, still these cases appear to lend considerable support to the author's strongly-expressed opinion. One criticism which the reviewer would like to make is that some of the cases seem classed as ipsilateral on rather slender grounds. Take for instance Case 4. The note here is L+6, R+5.5, the figures indicating in dioptries the amount of swelling of the nerve head. Surely the difference stated in this case is far too small to be independent of chance errors of observation. A second and equally competent observer might have given a different opinion with regard to the exact relative amount of swelling of the discs. In addition to the eighteen hospital cases already mentioned, Sir Victor Horsley cites three cases from his private practice. Case 2 was contralateral, the neuritis commencing on the right side and being more intense on that side at the time of the decompression operation. After the operation the neuritis became more intense on the left side. The patient died three days after operation, and post-mortem a tumour was found mainly on the left side of the brain. The opinion is given that post-mortem evidence seemed to show that pressure had been mainly towards the right side, and hence the earlier occurrence of neuritis on that side.

Much interest will attach to the view expressed by the author that in cases of choked disc the earliest changes are most commonly to be noted in the upper and inner quadrant of the disc, and, further, that in pressure dilatation of the optic nerve sheath this dilatation is usually most marked above. If the location of the earliest changes in choked disc is really so definite as Sir Victor Horsley thinks it is, then we ought in future to have less difficulty in giving a definite diagnosis in very early cases.

In regard to the cause of the radiating macular figure which may accompany optic neuritis, Sir Victor Horsley is in agreement with Gunn's theory that the radial arrangement is due to tension lines centred at the fovea. To test the correctness of this theory he chose an eye obtained from a case of early choked disc, first fixed the fundus in osmic acid, formalin, and absolute alcohol, and then subjected the specimen to drying. As the drying proceeded "the retina began to crinkle in a star-shaped pattern, the centre of which was the fovea." Under the microscope the intima was found raised, the effect of the altered tension having been first felt in the nerve fibre layer.

A careful histological examination was made of the whitish retinal areas so often seen in cases of choked disc. They were found to consist of a few red cells, of macrocytes which the author interprets as "epithelioid" cells, and of phagocytes containing fatty debris. These last are considered to be connective tissue corpuscles.

A very fine series of photographs adds to the value of this important paper.

J. V. PATERSON.

ON A NEW PUPILLARY PHENOMENON. (*A proposito di un (298) nuovo fenomeno pupillare.*) CORRADO TOMMASI, *Riv. di Pat. nerv. e ment.*, Vol. xv., F. 3, p. 183.

REDLICH has recently described a new pupillary phenomenon characteristic, he says, in epilepsy and hysteria. In these diseases great and repeated muscular contractions cause a notable dilation of the pupil, which is followed by a depression of the reaction to light whilst the reaction to convergence is always retained.

The author examined forty-one epileptics, ten hysterics, two neurasthenics, two patients suffering from maniacal depressive insanity, and two cases of dementia præcox.

In all subjects examined, both normal and suffering from the conditions above mentioned, it was found that strong muscular contractions produced dilation of the pupils. Reactions to light, accommodation and convergence were found when the patients were not executing any muscular contractions to be more often

affected in the diseased than the normal individual. These divergences become accentuated during muscular effort.

It would appear, therefore, that a different interpretation must be put on the results of Redlich, as his phenomenon is common to many other types of nervous disease.

F. GOLLA.

PSYCHIATRY.

FREUD'S CONCEPTION OF THE PSYCHO-NEUROSES. A. A.
(299) BRILL, *Med. Rec.*, Dec. 25, 1909.

IN 1895 Breuer and Freud found that hysterical symptoms like neuralgias, paralyses, epileptiform attacks, etc., could be traced to actual psychic traumata, which the patient could not consciously recall, but which could be readily demonstrated when the patient was put in the hypnotic state. They found that the hysterical manifestations were not accidental but had a definite cause, although in some cases there was only a symbolic relation between the cause and the hysterical phenomena; thus psychic pain may cause a neuralgia and moral disgust may cause vomiting. They concluded that these psychic traumata, or the memory of the same, act like foreign bodies in consciousness, and even long after their occurrence continue to influence like new causative factors; in other words: "The hysteric suffers mainly from reminiscences." When they succeeded in awakening the memory of the causal process with its accompanying effect the individual hysterical symptoms disappeared. The reason for the strangulation of the emotion was that at the time of its occurrence it could not be adequately worked off. The patient was hypnotized and questioned about the origin of the symptoms, and while recalling the original injuries either in hypnosis or in the normal state, the hemmed-in emotions were discharged and the symptom disappeared. This is the so-called Abreagirung—Abreaction—which means to work off something by living through it again.

Freud ultimately discarded the hypnotic method on account of the fact that he found some patients could not be hypnotized, and for various other reasons.

Instead he adopted the psycho-analytic method, of which the author gives examples, and explains the technique.

D. K. HENDERSON.

TREATMENT.

THE TREATMENT OF NEURALGIA BY INTRANEURAL (300) INJECTIONS. (*Die Behandlung der Neuralgien mit intraneuralen injectionen.*) OTTO WIENER, *Berl. klin. Wchnschr.*, March 7, 1910.

OF all the varieties of injections which have been employed in the treatment of neuralgia, that introduced by Lange in 1904, namely, the intraneural injection of large quantities of normal saline, has met with most success. Lange added β -eucaine to the salt solution, but the injections are quite as successful when this drug is omitted.

Wiener has employed this method extensively with strikingly good results, and even in aggravated cases he has obtained prompt and lasting improvement. In sciatica it can usually be depended on to do great good, provided the injection be given *into* the nerve. This is assured by the pain caused by the needle entering the nerve and by the severe pain down the leg which is produced during an intraneural injection. One may inject 100 c.cm. of saline into the nerve. In from three to five hours after the injection the patient usually has a rigor and a rise of temperature, which may last for three to four hours. This is merely "saline fever," and does not indicate any bacterial infection. It is usually accompanied by severe pain shooting down the affected limb. The patient should rest for twenty-four hours after the injection. By that time the pain has, as a rule, entirely disappeared and the patient can walk about; a feeling of stiffness in the limb is usually present, however. By the third day all pain and stiffness have disappeared. In many cases one injection suffices, but in some cases two or three injections may be required.

Of 60 cases so treated by Wiener, 1 case, a hysterical woman, received no benefit, 8 cases were improved, and 51 cases completely cured. In cases of trigeminal neuralgia the saline is injected in and around the point of emergence of the affected branch from the bone. The injection should consist of 25 c.cm. of saline, and it usually causes no pain, thus differing from the injection of absolute alcohol. Wiener has treated 26 cases of facial neuralgia in this way. Two of these received no benefit, 2 were improved, and the remaining 22 were cured.

As to the cause of the improvement brought about by such injections, most authors believe it to be entirely mechanical in nature. Wiener, however, thinks that the alterations in the circulation of blood and lymph which are produced play the major part in bringing about the relief which usually follows.

Provided aseptic precautions are taken, no ill effects ever follow the use of this method of treatment.

D. P. D. WILKIE.

SECTION OF THE POSTERIOR ROOTS IN TABES. (Ueber die (301) *Durchschneidung der hinteren Rückenmarkswurzeln bei der Tabes.*) G. MINGAZZINI, *Neurol. Centralbl.*, April 16, 1910, p. 406.

MINGAZZINI refers to Forster's operation (division of posterior nerve roots in cases of tabes with intractable gastric crises), and points out that eleven years ago he suggested this operation in cases of tabes, in which the shooting pains were so severe that the patient threatened suicide. In none of his cases, however, does the operation appear to have been actually carried out.

EDWIN BRAMWELL.

ON THE USE OF ELECTROLYSIS OF NERVOUS MATTER OF (302) THE CEREBRUM IN EXPERIMENTAL PHYSIOLOGY AND ITS APPLICATION TO SURGERY. (A proposito della elettrolisi della sostanza nervosa dell' encefalo nella fisiologia sperimentale e specialment nella pratica chirurgica.) C. NEGRO, *Riv. Ital. di Neuropatol.*, Vol. iii., No. 4.

THE author proposes to substitute the localised electrolysis which he has been able to demonstrate takes place without other disturbances, for excision of areas of the cortex in cases of motor discharge in which such an operation has been advocated. After preliminary experiments on animals he has successfully applied this procedure in a case of epilepsy. The positive pole is connected with a large electrode on the sternum, the negative is connected with a platinum wire held in a needle-holder with a switch and placed on the area of the cortex, which preliminary stimulation has shown to evoke the initial movement of the motor discharge. A constant current of 1.5 milliamperes is used. Under these conditions the electrolysis of the cortex immediately beneath the electrode takes place in about fifteen seconds, and the operation is complete when the area to be treated ceases to react to faradisation. The electrolysis is performed under the negative electrode, which fluidifies the necrosed tissue, and this is thus more easily absorbed than when the positive electrode is applied which causes coagulation. The absence of hæmorrhage and the delimitation of the area killed is said to be a great point in substituting this operation for excision.

F. GOLLA.

ON THE FAILURE OF NERVE ANASTOMOSIS IN INFANTILE (303) PALSY. W. B. WARRINGTON and R. W. MURRAY, *Lancet*, April 2, 1910, p. 912.

THE authors consider that nerve anastomosis has hitherto not been successful for the relief of infantile palsy.

They discuss the reasons for this, which they consider is due rather to physiological conditions than to surgical technique or the time of interference.

They suggest that less ambitious attempts may be successful. Their results were as shown in the following table:—

*Data from the Cases related above, shown in tabular form.
(No improvement found in any instance.)*

Name.	Age at time of operation.	Duration at time of operation since onset of illness.	Nature of operation.	Time elapsed since operation up to last observation.
E. J. ¹	2 years 2 months.	14 months.	Fifth cervical nerve placed in longitudinal slit in sixth.	4 years
A. M.	3½ years.	8 months.	Fifth nerve divided and joined end to end with spinal accessory.	2½ years.
E. J.	3 years.	9 months.	Fifth nerve completely divided and engrafted into longitudinal slit in sixth.	2¾ years.
E. C.	4 years.	6 months.	External popliteal divided and engrafted into internal popliteal.	3 years.
W. C.	13 months.	8 months.	External popliteal nerve divided and joined to a flap raised from internal popliteal.	2½ years.
F. B. ²	26 years.	9 months.	External popliteal divided and placed in incised slit in internal popliteal.	22 months.

¹ Mr Robert Jones and W. B. W.

² Injury to great sciatic nerve.

An additional case is that of H. J., æt. 13. Both lower limbs paralysed since infancy, the muscles supplied by the anterior crural being then chiefly affected. In 1905 the anterior branch of the right obturator nerve was joined by end to end anastomosis to the nerve supplying the rectus muscle. In 1910 no improvement has occurred as the direct result of the anastomosis.

AUTHORS' ABSTRACT.

Reviews

DIE ERKENNUNG DES SCHWACHSINNS IM KINDESALTER.

Professor TH. ZIEHEN. Karger, Berlin, 1909. M. 0.60.

THIS brochure is a clearly given account of the subject of feeble-mindedness. It was written for teachers and parents, and admirably fulfils its aim. It does not call here for any extended notice.

ERNEST JONES.

KINDERAUSSAGEN. HERMANN HAYMANN. Marhold, Halle, 1909. Pp. 43. M. 1.00.

THIS volume forms Heft 7 of the Band viii. of Hoche's series. In it the author gives an excellent account of the important subject of testimony in children. He discusses the various forms of lying, normal and pathological, and also the other numerous sources of error in the reproduction of a given memory. He lays great stress on the established fact that, especially with children, there are many causes of error in testimony quite apart from lying and from any gross disturbance of memory, therefore in children who are defective neither intellectually nor ethically. The volume can be warmly recommended to all who come in contact with problems of this nature.

ERNEST JONES.

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Petrén et Ehrenberg. "Étude cliniques sur la poliomyélite aiguë" (*Nouv. Icon. de la Salpêtrière*, No. 4, 1909).

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"Epidemic Poliomyelitis." Report of the Collective Investigation Committee on the New York Epidemic of 1907 (Nerv. and Ment. Monograph Series, No. 6, New York, 1910).

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Simon Flexner and Paul Lewis. "Experimental Epidemic Poliomyelitis in Monkeys" (*Journ. Experiment. Med.*, No. 2, 1910).

Department of Neurology, Harvard Medical School, Vol. iv., Boston, Mass., 1910.

The Cleveland Medical Journal, April 1910.

Helen Dean King. "Some Anomalies in the Genital Organs of Bufo Lentiginosus and their Probable Significance" (*Amer. Journ. Anat.*, Jan. 1910).

Hatai. "On the Length of the Internodes in the Sciatic Nerve of *Rana temporaria* and *Rana pipiens*" (*Journ. Neurol. and Psychol.*, Feb. 1910).

Donaldson. "Further Observations on the Nervous System of the American Leopard Frog compared with that of the European Frog" (*Journ. Neurol. and Psychol.*, Feb. 1910).

Review of Neurology and Psychiatry

Original Articles

TUMOUR DESTROYING MOST OF ONE OPTIC THALAMUS AND CAUSING CENTRAL PAINS, VASOMOTOR AND TROPIC DISTURBANCES, INVOLUNTARY HOWL- ING AND DEVIATION OF THE BODY TO THE OPPOSITE SIDE.

By T. H. WEISENBURG, M.D.,
AND
W. F. GUILFOYLE, M.D., of Philadelphia, Pa.

From the Laboratory of Neuropathology, Medico-Chirurgical College.

(With Two Plates.)

LESIONS of the thalamus causing clean-cut symptoms are rare. We report a gliomatous tumour which grew in the central portion of one lateral ventricle and extended into the third ventricle, and destroyed by direct implication and pressure most of the nuclei of one thalamus with the exception of the pulvinar and caused definite symptoms. The history is as follows :—

Jennie M., single, 20 years of age, was admitted to the service of Dr Samuel S. Stryker in the Presbyterian Hospital on 23rd June 1906. Her maternal grandmother died of paresis, and there was a history of tuberculosis in some of the members of her family. Her mother had been a neurasthenic for many years. The patient had the usual diseases of childhood. Menstruated at the age of twelve, and attended school until her fourteenth year, when she went to work as a sales-girl. About

six months before she came under observation she had an attack of muscular rheumatism (?), but the joints were not swollen. This was followed by continuous pains on the left side of the body, especially in the lower limbs. About three months afterwards she began to complain of dimness of vision, and when she started to write she would do so in a perpendicular direction instead of horizontally. She also complained of flashes of light and double vision. When asleep her mother noticed that her eyes would not close tightly, and the eyeballs rolled from side to side. She then began to complain of headache, sometimes occipital or frontal, attacks of vertigo, nausea and vomiting, which were usually most marked in the morning just after arising. She then consulted an oculist, and was given glasses, but her vision became gradually worse, and as a result she lost her position.

Three months before she was admitted to the Presbyterian Hospital, while walking along the street she suddenly fell, and when picked up was almost absolutely blind, and was then admitted to the Methodist Episcopal Hospital under the care of Dr C. A. Veasey. She could then see only large moving objects. The pupils reacted to light slowly, if at all, but did so promptly to convergence. There was present double optic neuritis, this approaching apparently the atrophic stage. The discs were not greatly swollen, and the blood vessels were only slightly tortuous. Corneal sensation was preserved, and the form fields were normal. At this time the patient complained of considerable pain in her limbs and in the back part of her neck, of constant prickly sensations, and of headache of sufficient intensity to cause her to cry out with pain. The prickly sensations were not constant, coming on periodically and lasting for an hour or longer, and were nearly always most marked in the back of the legs and over the back and shoulders, especially on the right side. She was treated in this hospital for about a month, and given mercurial inunctions, with no beneficial results. When discharged, vision was almost abolished. The choked disc had subsided into a state of optic atrophy. There were no ocular palsies noted, but the palpebral fissures appeared wider than normal, giving the eyes an appearance of proptosis.

Between the time of her discharge from the Methodist Episcopal to her entrance in the Presbyterian Hospital, a period of

about a month, the patient's sight became gradually diminished, and the headache, nausea and vomiting more intense. The pains and paræsthesia in the limbs persisted, and her limbs became weak, giving way at times when she attempted to walk, and she also began to stagger. According to her mother she had two convulsions during which she was unconscious, her limbs becoming stiff, eyes protruded and turned to the left, and the left arm was drawn up, and later was "thrown around." Her mother also stated that the eyeballs became gradually more prominent, the right first.

On her admission to the Presbyterian Hospital an ocular examination was made by Dr William T. Shoemaker. The pupils were small and equal, vision almost completely gone. Both eyes were strongly proptosed, the right more than the left. The ophthalmoscopic examination showed marked swelling of the disc, with the margins completely obscured. The vessels were full and tortuous, and small hæmorrhages could be seen around the disc. There was well-marked optic atrophy.

Examination showed the facial expression to be agonizing. There was a marked pulsation of the vessels of the neck, and the superficial cervical glands were swollen, but there was no enlargement of the thyroid gland. The bones of the thorax were small, the patient being generally thin. The heart and lungs were normal. The patient complained of considerable pain, tenderness and numbness in her limbs. The reflexes were generally increased. Taste was questionably lost on the right side of the tongue, as demonstrated by the sugar and salt test, and smell was sometimes diverted, the patient imagining at times she could smell tobacco and other things.

Subsequent examinations showed that the mentality was poor. She responded fairly well to questions, and would obey commands, but her attention could not be fixed for any length of time, and she would constantly call for her mother, and complain of pain and numbness in her hands. Speech was distinct. She had no difficulty in swallowing, and there was no dribbling of saliva. The head and neck were held rigidly, and she would constantly lie on her right side, and would resist efforts to move her to the left.

There was marked exophthalmos of both eyeballs, more on the right, with pronounced ptosis of both upper lids. The

palpebral fissure on the right was three-eighths of an inch in width, and on the left one quarter of an inch. When her face was irritated, she would close the left eye, but could not the right. She rarely winked, and, if at all, more on the left. The pupils were unequal, and of about normal size. The reactions to light and movement were totally lost. There was complete paralysis of upward associated ocular movement, almost complete to the right, less so to the left, and still less in looking downward. In looking to the right and left and downward, the left eye moved a little more than the right. The axes of the eyeballs were directed downward at about an angle of 45 degrees. When the lids were elevated and the patient asked to move the eyeballs, no difference could be found.

She could show her teeth equally well on both sides, and there was no facial palsy. Her jaw deviated to the right when opened, and when eating a piece of bread the right masseter did not contract as well as the left. The tongue was protruded normally, there being no tremor or atrophy. Hearing was diminished, especially on the right side.

Upper Limbs.—Could move them freely at all joints, the right perhaps more than the left. The grip in both hands was weak, the left more so. The biceps jerks were lost on both sides, the triceps being slightly retained. Finger to nose test showed some ataxia on the left side.

Lower Limbs.—Could be moved in all directions, but weakly. Both patellar and Achilles jerks were lost. There was no ankle clonus. Plantar irritation caused a doubtful extension of the big toe on both sides, but this was not positive. She seemed to appreciate pin-prick all over her body.

Repeated further examinations showed a similar ocular condition. When lying on her back and at rest there was some divergence of both eyeballs, especially of the left. The downward movement of the eyeballs, which was retained more than the movements to the right and left, was always in convergence, it being in the median line, and even towards the last, whenever she was asked to look downward it was always a converging movement. The ocular tension was about normal. The veins in the upper lids were very prominent, and the eyeballs could not be forced back into their sockets. The downward axes of the eyeballs and the exophthalmos persisted to the end.

The mental condition of the patient gradually became worse, paying less and less attention to her surroundings. She constantly complained of pains, flushes of heat, of prickly sensations all over her body, but especially over her right side, and at times would yell without provocation as if in fear. The head and body were constantly deviated to the right, but she could by effort bring her head to the median line, but could not or would not deviate it to the left. The nausea and vomiting persisted. She developed a weakness in the lower part of the right face, and she could not show her teeth as well on this side as on the left, and the tongue, when protruded, also deviated to the right. It was difficult to recognise any weakness in the limbs, for she would toss them about constantly and with equal force. All the tendon reflexes were lost, but plantar irritation produced doubtful extension of the large toe on the left side and flexion on the right. The patient died September 8, 1906, about two and a half months after she came under our observation and about eight months after the beginning of her symptoms. During the last month of her illness she almost constantly complained of various auditory and visual hallucinations, of flushes of heat and prickly sensations, especially in her arms, and at times had erythematous eruptions over the body which would fade and reappear, and occasionally an acneiform eruption over the right arm. In the early part of her disease incontinence of urine would appear at times and later became constant. There was no involvement of the bowels.

The autopsy was performed by Dr Joseph Sailer a day after her death. The macroscopic examination showed the external appearance of the brain to be normal. In the left lateral ventricle a large tumour was found which had the appearance of an extensive hæmorrhage, it being mottled and dark grey. Frontal sections made through the whole extent of the tumour demonstrated that the growth occupied the central portion of the left lateral ventricle and extended by means of the interventricular foramen into the third ventricle. That part of the tumour which occupied the lateral ventricle filled up this cavity completely in the central portion only, the anterior, inferior, and posterior cornua being however, dilated and their walls covered with a thick greyish black exudate, especially in their basal part. In this area the caudate nucleus was compressed slightly,

the adjacent internal capsule and lenticular nucleus not being at all involved. Above it compressed slightly the corpus callosum and medially displaced the septum pallucidum into the cavity of the right lateral ventricle. Inferiorly the tumour pressed upon the rostrum of the corpus callosum and the anterior commissure, seeming to be continuous with it inasmuch as the tumour extended into these parts.

The tumour evidently grew from the lateral ventricle into the third by means of the interventricular foramen, pushing before it a part of the septum pallucidum and the columns of the fornix, the latter structure forming the median boundary of the tumour. In the third ventricle the growth occupied the anterior upper portion, and on the left side compressed the anterior and middle of the optic thalamus, it being continuous with the thalamus in part. Frontal sections show that the growth had an irregular pyramidal outline, its base anteriorly, its apex extending straight backward. In the anterior portion it destroyed most of the thalamus, while posteriorly the lateral and ventral nuclei suffered less and the pulvinar escaped entirely. The optic thalamus on the right was not at all involved by the tumour, although its ependymal walls, as well as those portions of the third ventricle not directly involved by the tumour, were darkish in colour.

The right lateral ventricle was dilated, the inferior surface throughout being dark and the walls thickened, but not so much so as of the opposite side.

Microscopic Examination.—Sections taken from the tumour in the lateral ventricles were stained by the Weigert hæmatoxylin, hæmatoxylin eosin, and for neuroglial tissue by Benda's, Weigert's, Mallory's, and the phosphotungstic methods. The tumour is attached to the ependymal walls on nearly all sides excepting where perhaps the hardening and manipulation of the tumour has freed it. It is also attached to the corpus callosum and the septum pallucidum above and medially. Where it infiltrates into the nervous tissue the growth is not sharply defined, it merging gradually into the normal, and even away from it for some distance tumour cells can be found. The growth is very vascular, especially in its centre, being full of new capillaries, their lumen being of large diameter. These newly-formed vessels are full of blood cells, and all through the section blood

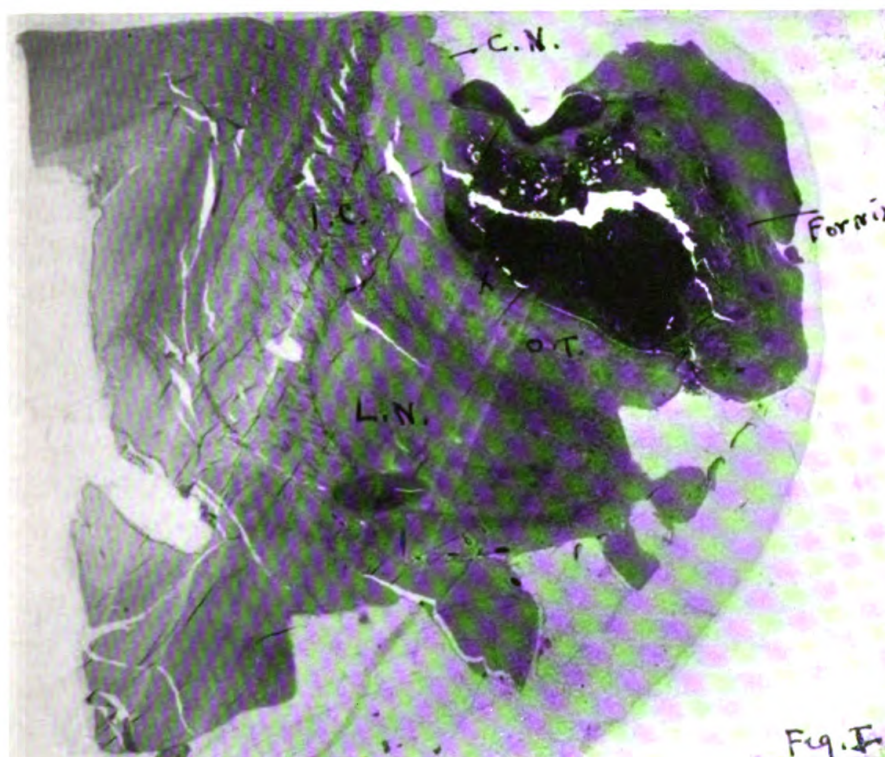


FIG. 1.

To illustrate Paper by Drs Weisenburg and Guilfoyle.

pigment and cells can be found, this probably accounting for its dark colour. The parts near the ependymal walls are made up of glia fibres and cells, some of which have the typical appearance of spider cells, while others are round with a darkly stained nucleus with opaque protoplasm, or are of irregularly spindle or stellate shape with and without projections. In parts there are no cells at all, the growth being made up altogether of fibres, while in other places neuroglial cells are packed tightly together. Everywhere in these areas, however, and forming, as it were, the matrix of the growth, are tightly packed blood cells.

In sections made of the inferior portions of the anterior and posterior cornu of the lateral horns, which on gross examination appear to be thickened and infiltrated by tumour tissue, by the microscope show a thick infiltration of tumour cells and glia fibres which in places seem to be imperceptibly merged with the normal tissue and again are sharply defined. Hyaloid bodies are fairly abundant within the cellular infiltration.

Thalamus.—Frontal sections show that the thalamus is destroyed principally by the pressure of the growth in the third ventricle, but that the tumour extends into it in part. In its anterior portion it is wholly destroyed, but posterior sections show a gradual escape of the lateral and ventral parts. As compared with the plan projection of v. Monakow, as shown in Fig. 25, p. 37, "Gehirnpathologie," Vol. ii., the tumour occupies the parts between 3-3 and 12-12. The shape of the growth is that of an irregular pyramid, its base anteriorly, the apex extending back into the pulvinar. Adopting the classification of Ernest Sachs for the nuclei in the thalamus, there is a complete destruction of the anterior and median nuclei, and dividing the lateral nucleus into thirds and ventral and dorsal halves; the whole of the anterior third is destroyed; of the middle third only the dorsal part is much involved, while the posterior third is very little if at all implicated. Those portions of the centre median and arcuate nuclei and of the ventral nuclei, which are located in the anterior part of the thalamus, are destroyed. The pulvinar escaped entirely. The red nuclei and the hypothalamus appear normal. No alterations are found in the lenticular nucleus. There is no trace of the stratum subcaudatum or of those fibres which come from the anterior nucleus and go to the caudate nucleus. The ganglion is so distorted that it is impos-

sible to trace the lamina interna and the continuation of the fillet and red nucleus. There is some degeneration of fibres in the knee of the internal capsule, the other portions being normal. Microscopically the tumour has the same characteristics as that in the lateral ventricle already described.

Third Ventricle.—The growth occupies only the upper anterior portion and is continuous in part with the left thalamus. The median boundary of the growth is formed by the fornix, with which the tumour is continuous. The choroid plexus is attached to the growth. It is possible to trace the ventricular ependymal cells along most of the thalamus, although they are diseased. There is some tumour infiltration in the other portions of the third ventricle, but the right thalamus is not at all implicated.

Caudate Nucleus.—That portion of the caudate which is in relation with the lateral ventricle is slightly compressed and its cells are diseased. The tail of the caudate, or that portion which is in apposition with the optic thalamus, is in places implicated by the tumour, and again seems to escape. As has already been stated, the fibres which come from the anterior nucleus are all destroyed.

The *cerebral peduncle* by the Weigert hematoxylin stain is of normal size. There is no degeneration in the foot on either side. The posterior longitudinal bundles are normal. There is no degeneration in the fibres of the red nucleus and of the intramedullary third nerves. By the thionin and hæmatoxylin eosin stains some of the cells of the third nucleus are degenerated, this consisting mostly in a granulation of the chromophilic substance, some displacement of the nucleus, and absence of dendritic fibres. This degeneration involves by no means all of the cells, for here and there normal nuclei can be seen.

Pons, Medulla and Cerebellum.—Sections made of the pons and medulla show no degeneration in either the posterior longitudinal bundles or the motor and sensory tracts. There is no distinct disease in any of the nuclei of the cranial nerves, although here and there a diseased cell can be found. The intramedullary portions of all of the cranial nerves are normal. The cerebellum is normal.

Cranial Nerves.—Both optic nerves, especially the left, show considerable degeneration, greater in the periphery. The third,

sixth, and the left fifth nerves are only slightly degenerated, but the right fifth is distinctly so. The right eighth nerve is also considerably degenerated, the diseased part being distinct from the normal, and even with high power there is no fading of the normal into the degenerated, this being the only nerve presenting this appearance. The other cranial nerves are normal.

Spinal Cord.—Sections of the spinal cord taken from the cervical and lumbar regions show some degeneration of the posterior roots, and a slight degeneration by the Weigert hæmatoxylin method in the columns of Goll. In the anterior horn can be found here and there a degenerated cell. The vessels are everywhere normal.

The *blood vessels* everywhere—that is, in the sections of the peduncle, pons, medulla and cerebellum—are much dilated and filled with cells with quite a marked perivascular space surrounding them. There is no disease of the vessel walls anywhere, with the exception of those bordering on the wall of the left lateral ventricle, which are infiltrated and surrounded by tumour cells.

REMARKS.

We had the opportunity of studying this case throughout most of the disease. The symptoms were of such character that we made a diagnosis of a tumour in the uppermost portion of the pons and cerebral peduncle, probably of gliomatous origin, basing this principally upon the paralysis of associated ocular movement upward, and to a less extent to either side and downward, paralysis of convergence in the same directions, weakness in the lower portion of the face, motor fifth and tongue of one side, and the general symptoms of tumour. As it is our intention in this communication to emphasize only the thalamic symptoms, we will first discuss those which are not directly referable to it.

The first symptoms were ocular, such as flashes of light, gradual loss of vision, diplopia, and a tendency to write in a perpendicular direction. All with the exception of the last can be explained by the increased intracranial pressure and gradually developing choked disc, but we are unable to account for the tendency to write upwards. It may have been that because of a possible loss of the lateral visual fields the patient wrote in this direction as she could see only in this area. Very soon the

symptoms of headache, nausea, and vomiting appeared, and in about two months she developed a slight protrusion of both eyeballs, more of the right, the side opposite the tumour. This increased gradually, the exophthalmos becoming marked, the axes of the eyeballs being directed downward at an angle of 45 degrees. There was weakness and drooping in both upper lids, which were oedematous and the veins full, total paralysis of associated ocular movement upward, less to the right, still less to the left, and least of all downwards. Convergence was proportionately lost in the same directions, it being slightly retained in a downward median direction.

Exophthalmos occurring in brain tumour is not uncommon, but so far no adequate explanation has been given. In the present instance we believe that it was not the result of the thalamic lesion, although it has been thought by some that irritation of a part of this ganglion produces exophthalmos. We are more inclined to believe that it was the result of a venous stasis. The tumour in its growth from the lateral to the third ventricle pushed before it the velum interpositum and the choroid plexus, it forming part of the growth and compressing the veins of Galen, this causing a probable thrombosis of the cavernous sinus and exophthalmos. Unfortunately, however, no examination was made of the orbit. In support of this contention, however, the lids were oedematous and their veins engorged, and the vessels of the neck were prominent and pulsated markedly.

The paralysis of associated ocular movement upwards can be accounted for inasmuch as there was disease of the cells of both oculomotor nuclei. It is rather difficult, however, to explain the paralysis of associated ocular movement to the right, left, and downward, inasmuch as there was no direct involvement of the posterior longitudinal bundles or nuclei of the sixth nerves. It is important, also, that the paralysis of convergence was proportionately lost to the paralysis of associated ocular movement, and, more important still, that in the gradual progression of these symptoms the converging movements were the last to go. This we have observed in other similar cases, and can be explained on the general principle, that of all movements of the eyeballs those of convergence are the stronger, and therefore the last to go. It is possible that part of the paralysis of associated ocular movement may have been the result of

the exophthalmos, but, on the other hand, this need not be present.

A possible explanation for the paralysis of associated ocular movement to the right and left may be found in the work of Ernest Sachs (1), who in one case in which there was a lesion of the ventral nucleus found a degeneration downwards into the posterior longitudinal bundle, tracing collateral fibres to the fifth, sixth, eighth, and tenth cranial nuclei. He believes that the posterior longitudinal bundle contains both ascending and descending fibres. In the present case the ventral nuclei were partially involved, and assuming a similar condition to be present in the human brain, it is possible that this bundle was diseased, although by the microscope there was no degeneration found.

The downward axis of the eyeballs at an angle of 45 degrees was probably the result of the paralysis of upward movement, and was a form of secondary contracture. This we have observed in another case. It does not, however, occur in every instance of associated upward palsy, but is more likely when there is exophthalmos, which was present also in the second case under consideration.

Of the other symptoms, excluding the thalamic, the paralysis of the lower portion of the face, of the motor fifth, and of the tongue on the side opposite the tumour were the most important. At no time could there be positively determined weakness of the limbs, and the paralysis of the lower portion of the face cannot be considered as part of a hemiplegia. The nucleus of the seventh nerve, as well as its intramedullary and extramedullary portions, were normal.

The paralysis of the right motor fifth, as well as that of the twelfth, was also probably the result of involvement of the central fibres on the left side, or the side of the tumour, although the extramedullary portions of the right fifth were considerably degenerated. One reason for believing that the paralysis of the right motor fifth was probably central in origin, was the fact that the sensory root fibres were degenerated as much as the motor, and still there was at no time disturbance of sensation in its distribution. The hypoglossus nuclei and its prolongation were normal.

Central facial palsy, either alone or in combination with

weakness of the tongue on the same side, has been observed in lesions of the lenticula or in tumours in which there is pressure upon the knee of the internal capsule. In this case, however, there was, in addition, weakness of the muscles of mastication on the same side. This combination of symptoms we have observed in two other instances in which the knee of the internal capsule was pressed upon, one of these being dilatation of the third ventricle, and a third, a clinically diagnosed case of third ventricular tumour. We are unaware that attention has previously been called to this combination of symptoms.

The patient had, besides, disturbance of hearing on the right, and perversion of taste and smell. The disturbance of hearing may have been a general pressure symptom, but it may also have been due to the extramedullary degeneration of this nerve. It is interesting, however, to note that Roussy (2) found, experimentally, disturbance of hearing in two cases. The perversion of taste and smell may have been part of the disturbed mental condition.

In the course of the disease the patient staggered at times, and there was also a questionable ataxia of the limbs on the left side, and absence of all reflexes with the exception of the plantar. It is probable that the ataxia was the result of the implication of the fibres in the thalamus, the continuation of the superior cerebellar peduncles. The loss of reflexes could be accounted for by the degeneration of the posterior roots in the spinal cord.

The mental symptoms were not unusual, and were such as are sometimes found in cerebral neoplasms of considerable size. The patient became, as the disease progressed, more stupid, and complained always of headache and pains, but did not have a tendency to somnolence, as has been found in lesions of the third ventricle.

We come now to the symptoms which may be considered the result of the thalamic lesion. These consist, briefly, in the central pains, vasomotor and trophic disturbances, constant howling, and lastly rigidity of the head and neck, with deviation of the body to the side opposite the lesion.

From the very beginning of the disease the patient complained constantly of aching pains all over her body, of periodic flushes of heat, and of scorching, hot or prickly sensations. At

first these came on periodically, lasting for an hour or longer, and were nearly always most marked in the back of the legs and to a less extent over the back and shoulders, but very soon they were complained of constantly, and were especially present over the shoulder and arm on the side opposite the lesion. There were also periodic erythematous and acneiform eruptions which were most marked on the side opposite the tumour. There was no œdema or rise of temperature, although, unfortunately, the surface temperature was not taken so as to determine variations on the right or left side. There were no disturbances noticed in the sweat secretion.

We consider the pains and sensations the result of irritation of the sensory fibres in the thalamus, or central pains and as vasomotor disturbances, although it is difficult to differentiate between them. Central pains are usually described as aching or burning, and occasionally sharp and shooting. They are not relieved by medication, and are nearly always on the side opposite the lesion and usually accompany hemiplegia. They may occur independently of sensory disturbances, but in a vast majority of cases these are always present. The usual vasomotor phenomena described consist of a feeling of warmth or cold, sometimes accompanied by paleness or redness of the skin with prickly and numb sensations. Trophic disturbances consist in alterations in the nutrition of the parts, as falling out of the hair, changes in the nutrition of the skin and nails, and skin eruptions of different kinds.

We assume that in the present case there were central pains and vasomotor and trophic disturbances. The continuation of the fibres of the fillet has been shown to terminate in the ventral third and lower half of the middle third of the lateral nucleus. Microscopical sections showed in our case an implication of the ventral third and partial implication of the middle third, this undoubtedly accounting for the pains, but it is difficult to understand why there should not have been sensory disturbances. This, however, may have been present but not demonstrated because of the mental condition of the patient.

Our knowledge of the vasomotor and trophic cortical centres is not accurate, and we know little of their subcortical transmission. It has been shown, however, that lesions in the central area have a relation to vasomotor functions, as, for example, in

the case of Oppenheim (3), who, as a result of a motor extirpation, obtained vasomotor symptoms on the contra-lateral side, and who also described a vasomotor form of Jacksonian epilepsy. Experimental evidence also supports this view.

The assumption then (Oppenheim and Cassirer (4)) that vasomotor centres are located in the central convolutions has at least some justification. Cassirer further believes that these functions are transmitted by fibres which accompany the motor and sensory tracts through the internal capsule into the subcortical ganglia, that is, either into the thalamus or caudate, and that they then proceed from here through the crus and pons to the vasomotor centre in the medulla.

There is little evidence to show that there are special subcortical tracts for vasomotor and trophic functions, although Parhon-Goldstein (5) believe that they go through the anterior limb of the internal capsule, while it has also been assumed by others that they accompany the motor or sensory tracts alone.

Our knowledge of the subcortical centres for vasomotor and trophic functions is vague. They have been placed by some in the caudate nucleus, by others in the optic thalamus, and have just as often been denied. It is important in the present case to eliminate if possible the influence of the partial involvement of the caudate nucleus. The head of the caudate was compressed by the tumour in the lateral ventricle and its cells diseased, but we have seen similar implication in dilatation of the ventricle due to hydrocephalus with no production of vasomotor or trophic symptoms. That portion of the caudate in apposition with the optic thalamus was for a small area implicated by the tumour. The most important change, however, was the entire destruction of the fibres which arise in the anterior nucleus of the thalamus and go to the caudate nucleus or the stratum subcaudatum of Sachs. It is, of course, impossible in the present state of our knowledge to clinically interpret these lesions, but in view of the fact that the alterations in the caudate nucleus were so slight in comparison with those in the thalamus, we have for the present at least assumed that they play a minor rôle.

The pathological evidence supporting the view that there are vasomotor, trophic, and heat centres in the thalamus is not at all conclusive, because in most of these cases the lesions have

not been limited to the thalamus or have accompanied motor palsies, as in the cases of v. Monakow (6), Probst (7), Beevor (8), Erikson (9), Lloyd (10), and Clarke (11); while in others, such as those of Sepillis and Lui (12), there was a bilateral tumour; in Fraenkel's (13) a tumour of the thalamus and corpora quadrigemina; Raimann's (14), a lesion of the thalamus and lenticula, and in the case of v. Bechterew and Ostenkov (15) a hæmorrhage the size of a grape in the deep portion of one thalamus, this producing erythema, heightened temperature, and œdema on the opposite side.

Of all these cases, the most important is the one last quoted, but unfortunately we have been unable to obtain the original article, and the description of the lesion in v. Bechterew's "*Die Funktionen der Nervencentra*," Vol. ii., leaves much to be desired.

Experimental lesions both support and contradict the view that vasomotor and trophic functions are located in the thalamus. Among the earliest to support such contention was Isaac Ott, who, in 1891, asserted that there was a vasomotor centre in the anterior and median portions of the thalamus.

Prus (15) is of the opinion that there is present in the thalamus a vaso-dilator centre, while a vaso-constrictor centre is located in the corpus striatum. Bechterew believes that there is both a vaso-constrictor and vaso-dilator centre in the thalamus.

Numerous experiments have been performed by Ott, Girard, Guyon (15), Bechterew and others in support of the contention that there is a heat centre in the thalamus.

It can be seen from both pathological and experimental evidence, especially in consideration of the more recent work of Roussy and Ernest Sachs, that no definite conclusion can be reached as to whether these functions are localised in the thalamus and caudate, but there is no doubt that occasionally lesions of the thalamus produce both vasomotor and trophic symptoms.

In view of the fact that in our case there were central pains and vasomotor and trophic symptoms, the question naturally arises as to what relation they bear to each other. It might be assumed, inasmuch as the lateral nucleus was diseased, and there were no motor symptoms other than the central involvement of the fifth, seventh, and twelfth cranial nerves resulting from

degeneration of the knee of the internal capsule, that either the vasomotor fibres accompany the sensory and that they were diseased, or that vasomotor and trophic symptoms are only a form of sensory irritation.

There is no evidence to support the latter view, for, so far as we are aware, this contention has not been advanced, but, after all, are not so-called vasomotor symptoms really sensory, and is not the usual description of vasomotor irritation just such as is given for the sensory?

We come, then, to the conclusion that there are no special centres for vasomotor and trophic functions in the thalamus. The evidence in this case shows, if there are special tracts for these functions, that they probably accompany the sensory fibres in the thalamus, and that in this and other cases, in which vasomotor and trophic disturbances have resulted from lesions of the thalamus, there has been implication of these fibres.

The second group of symptoms which we consider the result of the thalamus lesion was the intermittent howling. This was present throughout the disease, and was just as marked in the beginning when the patient was conscious as towards the end. It was not constant, was not brought on by any special cause, and was sometimes accounted for by the patient on the ground that she had pain, and was at times accompanied by an agonizing expression as if the patient was in fear. There were occasionally accompanying movements of the limbs and face, especially when the patient seemed in fear. Respiration and lacrimation were normal.

It is, of course, well known that in the optic thalamus have been placed the centres for automatic or involuntary movements, emotional and mimetic centres, and by Bechterew and his pupil, Ivanov (15), a screaming centre, stimulation of which causes crying, as of pain.

That the thalamus has some relation to the emotions has been abundantly proved. Numerous cases have been recorded by competent observers, such as Nothnagel, v. Monakow, Bruns, Mills, and others, in which there has been loss of mimetic ability of the facial muscles on the side opposite the lesion, while voluntary motion was retained. Opinions, however, differ as to whether the centre for mimetic movements should be placed entirely in the optic thalamus, as has been done by Brissaud (16), Minga-

zini (17), Bechterew, Kirchhoff (18), and others, or as assumed by v. Monakow, who does not admit such centres in the thalamus, but believes that part of the sensory reflex concerned with the emotions of laughing and crying is located in these parts.

Experimental evidence both supports and contradicts this view, the most important contribution to the subject being the work of Ivanov and Bechterew, in which they found that stimulation of the postero-lateral part of the thalamus, as well as of the superficial and deeper parts, produced contraction of the vocal cords and phonation. In contradiction to these experiments the work of Roussy and Ernest Sachs must be considered, these authors finding no such evidence.

The fact is that the whole subject of involuntary laughing, crying, and of the emotions in general, is still vague. In some cases there is loss of emotional expression, and then again there may be excessive emotion, as exemplified by more or less constant laughing and crying, and in such rare instances as the one here reported, by involuntary yelling. There is at the present time a patient in the Nervous Wards of the Philadelphia Hospital who has had for many years involuntary howling or yelling similar in character to that exhibited in the case here recorded. The lesion in this man's case is supposed to be thalamic.

Bechterew reports an excellent case of this kind. The patient, who was fully conscious, had automatic yelling which he could not account for. He had also automatic movements of the upper extremities, and besides bilateral ophthalmoplegia, disturbance of static co-ordination and of bladder functions. Necropsy demonstrated an encephalic lesion in the posterior wall of the third ventricle which involved the oculomotor nucleus.

Bechterew quotes Bayerthal (15), who believes that in new growths of the thalamus there may be, besides disturbance of the mimetic automatic movements, irritation of these. He quotes a case of Benaky (15), in which a tumour of the thalamus caused involuntary laughing and circular gesticulatory movements.

Our case proves that in an irritating lesion of the thalamus, as in a tumour, there may be produced involuntary howling or crying. We are, of course, aware that it may be assumed, as has been done by others, especially by Kirchhoff, who believes that the emotional centres are in the median nucleus, that this case supplies evidence that there may be a centre for the emotions in

the thalamus. We believe, however, that in the present stage of our knowledge such assumption is unwarranted, especially when it is considered that in the more recent experimental work already quoted of Roussy and Sachs no such evidence was furnished. We lean more to the opinion expressed by v. Monakow, that a part of the sensory reflex arc for the emotions is located in the thalamus, and that this has been in the present case irritated.

The last symptom which we considered as having connection with the thalamus was the constant tendency of the patient to roll towards the right, the side opposite the lesion, this being associated with rigidity and deviation of the head and neck to the right. When the patient was placed on her back she would always roll to the right, but could not or would not roll to the left.

In practically every experimental lesion of the thalamus there have been produced so-called circulatory movements or movements *de manège*. The exceptions to this are Nothnagel and Ernest Sachs. The latter, however, is of the opinion that the absence of such symptoms must have been because of the small lesions produced in his experiments, for in one extensive lesion situated near the nucleus Ruber, the opposite ear was drawn to the shoulder. Roussy, as a result of his work, came to the conclusion that the movements *de manège* are not dependent upon the thalamus, but on the concomitant lesion of the upper cerebellar structures—that is, of the red nucleus and its continuation in the thalamus. This is also the opinion of Sachs, who states that as soon as the needle advanced to and beyond the plain limiting the massa intermedia posteriorly, the excitation evoked a moderate deviation of the head and eyes to the opposite side and flexion of the opposite fore limb. He considered this the commencement of a progressive movement resulting from excitation of the fibres of the superior cerebellar peduncle. He further states that these fibres have been found by Horsley and Clarke to branch beneath and in the nucleus medius—that is, in the lamina interna.

Bechterew found experimentally in lesions of the deeper parts of the thalamus, especially near the grey substance of the third ventricle, that the circus movements were to the side of the lesion, while in lesions near the nucleus Ruber the move-

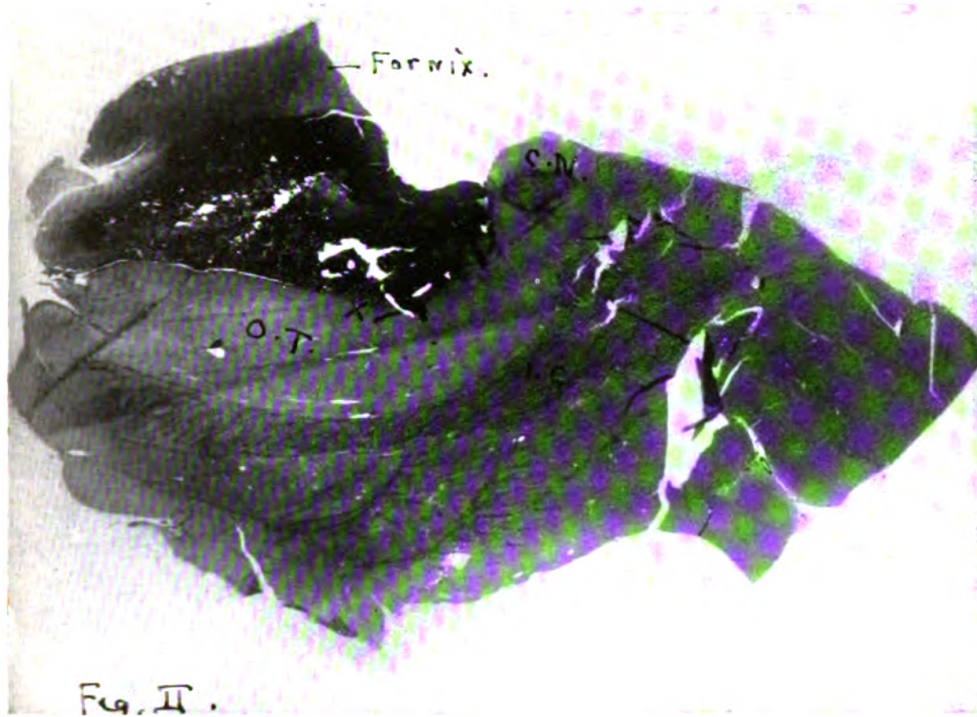


FIG. 2.

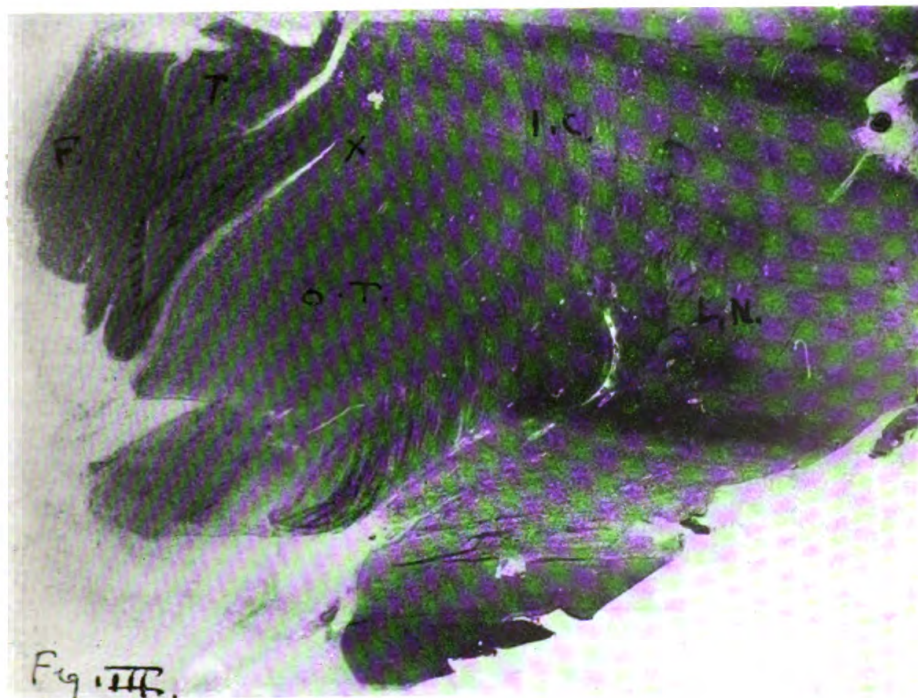


FIG. 3.

To illustrate Paper by Drs Weisenburg and Guilfoyle.

ments were to the opposite side. Pathological evidence is also furnished by him in the case already quoted, in which a hæmorrhagic lesion in the deeper parts of the thalamus produced circus movements to the side of the lesion.

The symptoms presented by our patient correspond with the results obtained in the experimental work of Sachs, and were no doubt due to the irritation of the fibres in the thalamus which form the continuation of the superior cerebellar peduncle, and that the rigidity of the head and neck and tendency to move to the side opposite the lesion were part of a progression movement.

Finally, we have no desire to account for the loss of control of the bladder on the ground of the thalamic lesion, although it has been claimed, especially by Bechterew, that such centres are located in the thalamus. We are more inclined to believe that the incontinence was due to the mental condition, inasmuch as it appeared after the stupidity became marked.

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344 TUMOUR DESTROYING OPTIC THALAMUS

DESCRIPTION OF PLATES.

Figs. 1, 2, 3. Photographs of sections of tumour of third ventricle compressing optic thalamus. Median boundary is formed by the fornix. The ependymal cells of the third ventricle can be traced in part, the tumour being continuous with the thalamus at point marked "x." Fig. 1 shows greatest implication of thalamus. Figs. 2 and 3 show less implication and are posterior to Fig. 1.

A CASE OF ABSCESS OF THE PITUITARY BODY, PROBABLY OF A GUMMATOUS NATURE.

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THE following case is of interest not only because lesions of the pituitary body are somewhat rare, but especially because the lesion in question was of an extremely circumscribed character. There was no large tumour mass to suggest that the symptoms and pathological appearances of the brain were merely the result of general pressure. They were, in all probability, due to direct interference with the normal function of the gland.

In the latter part of December 1909, a woman, 33 years of age, walked to the surgery of Dr Eric Wright of Romford, and complained that she had been ill for some months and had been treated for hysteria, and that, owing to increasing nervousness, she was unable to continue her occupation or work. She also complained of fainting attacks, which were getting more frequent.

The friend who accompanied her told the doctor that the patient was subject to "fits," which she described as follows:—The onset was gradual, the patient becoming faint, and usually going to bed, where she would lie for hours without moving, but not quite unconscious. On examination Dr Wright found the patient very pale and anæmic. Eyeballs slightly prominent. No nystagmus. The speech was peculiar, each syllable being slightly emphasised, as in disseminated sclerosis. No tremors. Knee jerks considerably plus. No ankle clonus. Plantar reflexes were of well-marked extensor type. Tactile sensation

normal. Pupils equal; they reacted to light and on accommodation. Examination of discs not satisfactory (no time to dilate pupils). Heart sounds normal.

History of some months' amenorrhœa.

The patient seemed quite sound mentally.

A provisional diagnosis of disseminated sclerosis was made.

A few days later he was sent for to see her as she was in a "fit," and found her lying on her back in bed, and was told that she had been there all day, had once flung herself out of bed, and had taken no food. She appeared to be conscious, and could be roused by speaking loudly, but did not answer. She seemed half dazed. Conjunctival reflexes present, but diminished. Pupils equal and reacted to light. No paralysis. Knee jerks increased. Plantar reflexes of extensor type, but not well marked. Apparent loss of sensation, as she did not flinch to a good sharp dig with a pin. Pulse and respiration slow.

Her friends told him that since his last examination she had been "queer" mentally and at times violent. He ordered her into the Romford Union Infirmary, and did not again see her. He was unable to remember whether there was any history of vomiting.

Dr J. A. Fraser, under whose care she then came, states that she became very violent just before admission to the Romford Infirmary, but on admission she was semi-comatose, her extremities were cold. The *left* conjunctival reflex was absent, the right present. The left pupil was contracted. The right one contracted to light. She was continually moaning, did not answer questions. Her eyes followed his finger. She refused food. The right knee jerk was exaggerated, the left could not be elicited. When her arms were lifted by the observer, they gradually fell to her side "as if she had some control" over the muscles; the right arm seemed to be more under control than the left.

There was a previous history of attacks of coma while living in Suffolk.

A brother stated that she had been out of work for three months, and had been subject to the stuporose attacks for two months, about every other day, and always at night time.

She was brought into the Asylum on the evening of December 24, 1909, and carried to bed: apparently quite

unconscious: breathing noisily and churning up her saliva: her temperature was 101·4. Right conjunctival reflex present, left absent. On the next day both conjunctival reflexes were absent. She was still unconscious and breathing noisily, thick yellow phlegm dribbled from her mouth, and about 11 a.m. she vomited a dark grumous-looking fluid. Limbs flaccid. Well-marked extensor plantar reaction on right. (No Oppenheim sign.) Indefinite on left. Knee jerks *absent*. Pupils small and equal. Pulse 72, very irregular. At 4 p.m. she died.

Autopsy nineteen hours after death. Body well nourished. Hypostatic lividity marked. Rigor mortis present.

Head.—Dura mater not adherent to skull and very thin, blood vessels at base, etc., healthy. Meninges thin, clear, but congested. The gyri were markedly flattened, of good pattern, grey matter of average depth and dark colour. Ventricles not dilated. The cerebrum, pons and cerebellum were *very* soft and putty-like, and the spinal cord of the consistence of thick cream in places. The hypophysis was the size of a hazel nut, and a drop of thick cream like pus was visible on the right side beneath the optic nerve.

Thorax.—Lungs and heart appeared normal except for congestion of the former.

Abdomen.—Liver friable, pale patches, gall bladder full of bile, no stones. Uterus and appendages natural, as also the intestines and supra-renal. Unfortunately no special examination of the thyroid was made.

Microscopical Examination.—Ascending frontal, right and left. Some fibroid thickening in places and slight proliferation of cells (lymphocytes). Enormous engorgement of vessels and hæmorrhages. Zonal layer wide. At its surface there was some increase of glia cells in patches and a few small amyloid bodies. The glia cells show a pale reddish granular cytoplasm and large clear nucleus. There were some small dark round nuclei with clock-like chromatin and slight amount of red cytoplasm at one side which bore a fairly close resemblance to plasma cells.

The nerve cells generally were very sparse, pale, and appeared to be degenerated; probably the second layer (Meynert's) was best preserved; here the cells, though pale, had a fairly good form, generally with a large pale nucleus.

The pyramidal cells (third layer) were *very* pale or ghost-

like, with eroded borders; some had a wide halo around the nucleus, which in these cases was shrunken and stained darkly; but in the majority the nucleus was swollen, very pale, with fine granules, staining light green with Pappenheim. In many cases all that remained of the cytoplasm was a small patch partially surrounding the nucleus.

The Betz cells were so pale as to be scarcely visible; they had either a large nucleus of the same density and homogeneity as the cytoplasm, or else a small nucleus darker than the cytoplasm, with a halo around it. Absolutely no tigroid was to be seen in any of the nerve cells. Polymorphous cells similar to the pyramids. No plasma cells, unless the cells noted in the first layer were of this nature; but the pericellular spaces were occupied by many rather large ($8\ \mu$) pale nuclei. No vascular lesions noted, but increase of peri-adventitial cells, especially around the vessels in the white matter. No increase of glia except in the first layer. Axons darkly stained. There was a rather large number of shrunken sub-cortical nerve cells.

Cerebellum.—Meninges showed marked engorgement and extravasation from the vessels. In the molecular layer there were many small cells similar to those seen in the first layer of the cortex, and several minute hæmorrhages. There was about the normal number of Purkinje cells, many of which presented an average stichochrome appearance with a large nucleus, but scattered about were many others which were shrunken, distorted, and eroded, staining darkly and irregularly, and having small, dark, homogeneous nuclei. No increase of glia.

Spinal cord.—Cervical enlargement. Central canal was large and triangular ($187\ \mu$), and filled with granular detritus. Some proliferation of endothelial cells just outside the canal on one side.

The cells of the anterior horn were deeply affected, being pale and disintegrated, some of them a mere shapeless mass of loose granules. Their nuclei were small, homogeneous, not very dark, and in many cases they were surrounded by a halo. Some cells retain a few discrete tigroid masses. Pigment in excess. There was great venous engorgement and numerous small extravasations of blood seen at all the levels of the cord examined. No increase of glia. Lumbar enlargement similar, but the anterior horn cells were less affected; they were large,

pale, some showed a fairly good tigroid pattern, but others were broken down as in the cervical region. Their nucleus generally was pale and homogeneous.

After hardening in Muller's solution the cord showed throughout the cervical region, on transverse sections, a pale, well-defined area limited to the columns of Goll, but on microscopical examination of sections stained by Weigert or osmic acid, beyond some slight increase in the amount of the supporting tissue in this region, there were no signs of either recent or old tract degeneration; nor was any such visible in longitudinal and transverse sections from the cervical, dorsal, or lumbar regions of the cord.

Kidney.—Extensive acute parenchymatous changes, with necrosis of tubal epithelium and probably fatty degeneration (vacuoles in cells).

The epithelium was pale, swollen and granular; nuclei pale or not visible. No cirrhotic changes. No endarteritis.

Liver.—Marked fatty infiltration. No other morbid changes except a slight amount of small dark cell proliferation around the portal vessels, dilatation of the sinusoids, and in consequence some shrinking of the parenchyma.

Hypophysis (sagittal sections stained in Pappenheim's mixture). The major part of the interior of the gland was destroyed and occupied by a pale, granular, necrosed mass, containing a few large, purple-stained, irregular colloid masses and large numbers of very pale pink, blue, or dull yellow spheres (2 to 6 μ or more in diameter), some of which showed concentric markings. This part of the necrosed material looked like an emulsion. The outer edge of the necrosed area stained slightly darker and contained numerous shrunken, darkly-stained, disintegrated nuclei, which do not look like pus cell nuclei, but as collapsed round nuclei, or shells, and frequently two or more are sticking together.

As regards the structure of the gland, roughly speaking, a half of the circumference of the tissue which bounded the necrosed area was very thin—a mere shell—and consisted of a few concentric layers of gland cells and an inner belt of fibrous-looking tissue (remains of the anterior lobe). The other half of the circumference was much thicker (representing remains of the posterior lobe), and consisted of a mass of congested vessels (at

one part), fibrous tissue, cysts, areas crowded with small dark nuclei around new-formed vessels, and, lying in the most external area, numbers of plasma cells.

The cysts, of varying size up to 1·3 mm., were lined by a single layer of cubicle or flattened epithelium, and some contained colloid material, while others were empty. The nuclei in the proliferating areas consisted of more or less rounded bodies, 4 to 5 μ in diameter, with a dark rim and peripherally placed chromatin dots. Lying among the small nuclei are fairly numerous large (9 μ or more), oval, pale nuclei with very pale interior and a few fine chromatin dots (but no red nucleolar spot), which are in all probability endothelial nuclei. A solitary plasma cell can very occasionally be seen in this region. They are met with, however, in very large numbers in the most external layer of this region. Their nucleus is round and shows a clock-like arrangement of chromatin, and not an endothelial character.

No tubercle bacilli were found in specially stained sections, and no micro-organisms whatever in sections stained with Unna's polychrome blue. No giant cells seen. There is a very great similarity between the morbid changes shown in the sections of this gland, and those in sections from a gumma in the pons.

REMARKS.

(a) *Clinical*.—(1) There were no signs of acromegaly, but the comparatively acute course of the lesion may perhaps account for this.

(2) Amenorrhœa was present, as it seems generally to be in lesions of this organ. The intimate relation between the hypophysis and the uterus has long been suspected, and the recent work of Erdheim and Stumme (1) would seem to establish this relationship beyond doubt.

(3) Drowsy or semi-comatose attacks appear to be very distinctive features in affections of the hypophysis, but in most of the cases of tumour in or in the region of this body the growths have been comparatively large, so that it has been difficult to determine whether the coma was the result of general pressure on the brain or of interference with the pituitary secretion. In three out of four cases collected by Dr Purves Stewart (2) of large tumours in this region, attacks of drowsiness

were a marked feature. In two of the cases with this symptom, the infundibulum only was affected, *and in the fourth case, where drowsiness was not present, there was complete destruction of the gland.*

In 1905 Stroebe (3) published a case of gumma of the hypophysis, in which, as he describes this body as distinctly enlarged, we may, I think, draw the conclusion that it was not very markedly enlarged; and as this case presents many points of similarity with the one I am now discussing, I shall give a brief account of it.

The woman, aged 52, had been ill only seven weeks, and the outstanding symptom was a drowsy or semi-comatose state. Urine diminished in quantity and contained leucocytes, casts, and large amount of albumen. Marked tremor of extremities, slight degree of muscular rigidity. Knee jerks brisk. No ankle clonus. Pupils equal, they reacted. The fundus showed no abnormality; a week later the right pupil became dilated, rigid to light and on accommodation. The left was smaller and reacted slightly. She died comatose. Diagnosis: Nephritis and anæmia. The hypophysis was found to be enlarged and its normal structure almost entirely replaced by a necrotic, caseating gummatous mass, and small cellular areas and giant cells resembling tubercular disease, but the search for tubercle bacilli was not successful.

Here, also, in an acute affection of the hypophysis and probably without much enlargement, there is the comatose state, and from the clinical features it is probable that the kidneys were, as in my case, in a state of acute parenchymatous nephritis.

Purves Stewart is inclined to the view that the drowsiness is caused by upward pressure on the floor of the third ventricle, either by direct pressure on the ventricles and Sylvian aqueduct, or by compression of the arteries of the circle, causing cerebral anæmia; and he thinks that the intermission in the drowsiness may be explained either by variations in the tension of a cystic tumour or by alterations in the direction of growth with relation to the subjacent vessel.

But this explanation in connection with my case, and probably in that of Stroebe's, is not altogether satisfactory. It is true that in my case there was distinct flattening of the convolutions pointing to increased intra-cranial pressure. But it seems almost inconceivable that the amount of pressure neces-

sary to cause such obvious signs could have been exerted by such a small increase in the size of the hypophysis. One frequently meets with much larger growths, which cause no obvious general flattening of the convolutions, although in the case of such as grow from the inner surface of the dura they may make depressions in the cerebral surface many times the size of the hypophysis in this case.

From its consistency, behaviour to alcohol fixation (presence of vacuoles in tissue), and the dilated lymph spaces, etc., it is probable there was in my case marked œdema of the brain. There was also great and widespread venous engorgement and rupture of small meningeal and cortical vessels.

From these appearances I am inclined to ascribe the pressure that existed not to the slight increase in the size of the gland, but to venous engorgement and general œdema of the brain.

If this assumption be correct, it was a pressure condition very likely to be of a variable nature. Sometimes, when the venous congestion was increased, the pressure would be higher, and this would correspond to a comatose state, sometimes when the congestion was less, the pressure would fall and this would correspond to a waking state. And if such was the cause of the increased pressure, the variations in this latter condition might occur quite rapidly, corresponding to the rapid emergence of the patient from the comatose attacks, as described in one of Purves Stewart's cases.

But, on the other hand, there is evidence that if the brain be deprived of the secretion of the hypophysis, a state of coma occurs. Thus Pirrone (4) found that dogs who had suffered from total ablation of the pituitary body passed into a state of coma. Harvey Cushing (5), Crowe and Homans (6) noted the same fact in dogs among the well-marked symptoms following total ablation of the gland. The animals remained bright for a period of seven to eighteen days and then became sleepy, lethargic, comatose, and died.

But granting the accuracy of these results, the coma may still be due to cerebral œdema, and not directly to the deprivation of a hypophyseal secretion to the nerve cells. It is to be remarked that in one of Purves Stewart's cases mentioned previously, where the hypophysis was totally destroyed, coma was not present; so that, reviewing all the circumstances, it seems

most probable that cerebral œdema or some vascular disturbance is the determining factor in the production of the comatose state in these cases, and not necessarily the deprivation of a secreting substance from the hypophysis.

(4) Neither tremor nor muscular rigidity were present, although they appear to be symptoms very commonly associated with lesions of the hypophysis.

It is a matter for some surprise that with such extensive pathological changes in the nerve cells and the presence of an extensor plantar reaction no signs of tract degeneration were discovered in the cord.

(b) *Histological. Central Nervous System.*—One is struck by the profound and widespread lesions of the nerve cells, most marked in the cerebral cortex. These changes were in all probability of recent occurrence, for three months before death the patient had been in employment as a cook, and only about two weeks or less before death she was able to walk to the doctor's surgery, and, according to his account, appeared quite sound mentally.

The evidence we have concerning the importance of the hypophysis in the maintenance of health affords justification for concluding that these morbid appearances were the result directly or indirectly of the destructive lesion found in the gland. The other organs, with the exception of the kidneys, appeared normal. And in the microscopical examination of the brain in other cases with acute renal changes of a similar nature, I have not met with these changes in the nerve cells. In Stroebe's case also there was acute renal changes, which probably in his and my case were secondary to the pituitary affection.

The experiments of Harvey Cushing, Vassale (7), Pirrone, and others lead them to conclude that the hypophysis is essential for the maintenance of life. Dogs develop a definite train of symptoms and die within a few days or weeks after complete excision.

Pirrone describes also changes in the cerebral nerve cells very similar to those found in this case. There was swelling, dissolution of the chromatoplasm, and the assumption of a vitreous aspect to the cell body.

A similar change in the nerve cells, especially that which characterised the Betz cells, is sometimes met with in the cortex

of aged people, in general paralytics, and in some cases of dementia præcox.

In this last-mentioned group the similarity is very great, and in certain cases not only are the majority of the Betz cells in the condition I have described in this case, but also the majority of the pyramidal and other nerve cells. In fact the appearances in general have been very similar to those noticed in this woman, and it should also be noted that the symptoms in the katatonic form of dementia præcox are often of the nature of coma, stupor, or drowsiness; this leads to the suspicion that in this form of mental disorder an interference with the functions of the hypophysis may be a causal factor.

Hypophysis.—As to the nature of the lesion in this body, the histological appearances seem to point either to a tubercular or gummatous condition, and in the absence of lesions of other organs of a tubercular nature, and the failure to obtain evidence of tubercle bacilli, I believe that the balance of evidence is in favour of the gummatous character of the lesion.

This concludes my account; and while I am sensible of the scanty nature of the history and symptoms, and the many gaps in the histological details, I think the case, in spite of these deficiencies, is of sufficient interest to be recorded. It is one of only a few cases, so far as I can gather, where the lesion of the gland has been extremely circumscribed and uncomplicated with tumour masses.

It may help to increase our knowledge concerning the very important rôle this seemingly insignificant little gland plays in the normal physiology of the central nervous system, and possibly shed some light upon the relationship between this body and the brain in certain forms of dementia præcox.

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A CASE PRESENTING MÉNIÈRE'S SYMPTOMS ALONG WITH FACIAL PARALYSIS.

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(With Plates 11, 12 and 13.)

ALTHOUGH Ménière's (1) classical case was described as long ago as 1861, there is still considerable confusion on the subject of Ménière's Disease, and the term is frequently applied to any condition in which giddiness is associated with a lesion of the ear. It would probably be better to discard altogether the use of the words "Ménière's Disease," but, if the term be retained, it should be kept for cases in which Ménière's symptoms appear in an apoplectiform manner. Ménière's triad is usually described as consisting of "noises in the ear, giddiness, and vomiting," but v. Frankl-Hochwart (2), to whose valuable monograph we wish to state our great indebtedness, includes under the heading of Ménière's symptoms—"Deafness, Tinnitus, Giddiness, Nausea, Vomiting, Cerebellar Ataxia, Nystagmus, Cold Sweats, Fainting, and a Feeling of Pressure in the Head."

It cannot be too emphatically stated that this "disease picture" is merely that of a lesion of the membranous labyrinth or of the eighth cranial nerve, and that it should be associated with disease of the labyrinth, just as "tremor, rapid pulse and exophthalmos" are associated with the condition of hyperthyroidism.

In what conditions, then, do we meet with Ménière's symptoms? The answer to this question involves an attempt at classification of diseases of the inner ear and auditory nerve, although it must be admitted that our existing knowledge is barely sufficient for this purpose: many pathological conditions affect the aural labyrinth in which no microscopic examination of the labyrinth has yet been made.

Conditions which give rise to Ménière's Symptoms.

- I. *Variations in labyrinthine pressure, or excessive movements of the labyrinthine fluid, as produced by forcible*

syringing, heat, cold, violent inflation of the middle ear, loud sounds, slight injuries (insufficient to cause hæmorrhage), dancing, the motion of the sea or of a railway train, etc.

II. *Electrical Stimulation.*

III. *Vascular Congestion* (e.g. due to amyl nitrite or otitis media, etc) or *Anæmia* (e.g. quinine, general anæmia, loss of blood).

IV. *Hæmorrhage into Labyrinth—*

{	<p>A. Traumatic.</p> <p>B. Due to diminished air pressure (Caisson disease).</p> <p>C. In bleeding diseases, notably leukæmia, pernicious anæmia, nephritis, and arterio-sclerosis.</p> <p>D. In exanthemata (Politzer) (8).</p>
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V. *Acute Inflammatory Conditions—*

- A. Serous labyrinthitis.
- B. Purulent labyrinthitis.

VI. *Chronic Inflammatory Conditions—*

- A. Simple chronic inflammation in chronic middle-ear catarrh? Otosclerosis.
- B. Tubercular.
- C. Syphilitic: (1) congenital, (2) acquired.

VII. *Neuritis of Auditory Nerve due to—*

- A. Acute specific fevers.
- B. Tuberculosis.
- C. Syphilis.
- D. Herpetic inflammation of ganglia (Polyneuritis cerebialis Menieriformis).
- E. Toxic conditions—quinine, salicylates, tobacco, alcohol.

VIII. *Hæmorrhage into Auditory Nerve—*

- A. In bleeding diseases (includes the present case).
- B. In exanthemata.

IX. *Degeneration of the Auditory Nerve and Membranous Labyrinth—*

- A. Chronic progressive labyrinthine deafness.
- B. Occupational deafness.

X. *Tumours*—

A. Of acoustic nerve.

B. Of cerebello-pontine angle.

XI. *Neuroses*—

Pseudo-Ménière's Disease (v. Frankl-Hochwart) in epilepsy, hysteria, neurasthenia, hemicrania.

Ménière's Disease is the apoplectiform occurrence of Ménière's symptoms, and is usually attributed to hæmorrhage into the labyrinth. Before accepting a case as a true one of Ménière's Disease, Schwartz and Grunert (3) demand that the ear shall have been normal up to the time of the occurrence of the symptoms, but Heermann (4) points out the difficulty of being sure that the ear was previously healthy, because even intelligent patients may not know that they are deaf in one ear. F. Alexander and Manasse (5) record a case in which a patient had five or six attacks of Ménière's symptoms, and, although the whisper was only heard by the right ear at one yard, the patient did not know that he had not got perfect hearing. In most cases ear disease has existed for a long time before an attack comes on of sufficient severity to cause the patient to seek medical advice. Heermann states that out of 50 cases 27 had had previous disease of the ear. Of the 11 cases recorded by F. Alexander and Manasse, 6 showed more or less marked signs of progressive labyrinthine deafness.

Pathology.—Almost all the cases of sudden occurrence of Ménière's symptoms, in which a microscopic examination of the inner ear has been made, have been cases of leukæmia. The only non-leukæmic case reported by v. Frankl-Hochwart is that of Gruber (6)—this was a syphilitic patient who died of typhus fever: Gruber regarded the case as one of syphilitic affection, but v. Frankl-Hochwart thinks that the conditions present—vascular injection and blood-stained labyrinthine fluid (on macroscopic examination)—may have been due to typhus. In a paper recently published by one of us (J. F. S.) on the subject of congenital syphilitic disease of the ear, it was noted that in several cases the deafness and other symptoms of Ménière's Disease came on in a single night (29).

G. Alexander (7) claims even Ménière's original case as leukæmic: Ménière's patient was a girl, aged 16 years, who caught cold whilst driving during her menstrual period; death

occurred five days after the onset of the inner ear symptoms, and during these days the temperature was raised : at *post-mortem examination* red plastic exudation was found in the canals and, to a slight extent, in the vestibule ; the cochlea was free ; the brain and spinal cord were normal ; no *microscopic examination* of the inner ear was made.

In case (13) recorded by F. Alexander and Manasse there was, however, no trace of leukæmia. The case was that of a man aged 52, who suffered from chronic progressive labyrinthine deafness with typical Ménière's symptoms a short time before death. On microscopic examination Alexander and Manasse found recent multiple hæmorrhages in the *ramus cochlearis* and *vestibularis* ; the patient died of hæmorrhage into the left lateral ventricle. In addition to the hæmorrhages in the ear, atrophy of Corti's organ and of the spiral ganglion were present. There was no facial paralysis in this case.

Our case supports the view of F. Alexander and Manasse (8) that Ménière's symptoms may come on in an apoplectiform manner in non-leukæmic cases : we must note, however that our patient suffered from chronic (senile) progressive labyrinthine deafness and also from Eustachian obstruction on the left side.

Lucae (9) states that in cases of chronic aural sclerosis Ménière's Disease may come on suddenly without apparent cause : the patients only seek advice for the sudden attack.

Hillairet (10) was the first to point out that Ménière's symptoms might be caused by a lesion of the eighth nerve.

V. Frankl-Hochwart (pages 13 and 14) records the clinical notes of two cases of Ménière's Disease in which there was paresis of one half of the face : the second case died, but there is no mention of a microscopic examination of the ear. Similar cases are recorded by Kaufmann (11) and Hammerschlag (12). We have been able to trace the following cases of leukæmic deafness with Ménière's symptoms in which microscopical examinations of the labyrinth were made : Alt and Pineles (18) (1 case), G. Alexander (7) (15 cases), Steinbrugge (19), Mott (20), Lannois (21), Parkes-Weber and Lake (22), Schwabach (23), Politzer (8), Kock (24), and Finlayson (26). Manasse (25) examined the inner ear from thirty-one cases of nerve deafness and found two with evidence of labyrinthine hæmorrhage in addition to the usual degenerative changes. Moos (27) records the case

of a syphilitic patient in whom Ménière's symptoms were engrafted on existing ear disease. Microscopical examination showed periostitis of the vestibule and small-cell infiltration of the membranous labyrinth. Haug (28) reports a tabetic case in which the acoustic nerve and ganglia were affected. Moos (13) and Steinbrugge record a case of senile dementia in which hæmorrhagic pachymeningitis was found at post-mortem: the patient had frequently suffered from giddiness. Evidences of past hæmorrhages were found in the facial canal and also between the bundles of the cochlear and vestibular nerves. Pigment was also present in the connective tissue of the membranous labyrinth. In a similar case previously recorded the same writers found, in addition to evidences of old hæmorrhages, thickening, dilatation, and, in places, obliteration of arteries of labyrinth. Both these patients had suffered from hallucinations of hearing. Ramsay Hunt (14) has described a syndrome characterised by herpes zoster oticus facialis, or occipit-collaris, with facial palsy and auditory symptoms. The same condition had previously been described by v. Frankl-Hochwart under the title of polyneuritis cerebialis Menieriformis and by numerous other writers. In one case Ramsay Hunt (15) demonstrated sclerosis of the nerve of Wrisberg on microscopical examination.

PRESENT CASE.

A. M'R., male, piermaster, aged 65; patient suffered from measles and typhoid as a child, and for the last few years from rheumatism and from left inguinal hernia; no history of syphilis; his left eye was removed thirty years ago; patient stated that he had never suffered from deafness up to the time of the last illness; father and mother died of old age, one brother of cancer and one sister of "water in the head."

There has been some difficulty in getting an accurate history of the case, but after extended inquiry we have arrived at the following account, which may be accepted as correct:—

On 1st December 1907 he had a long day of exposure to cold on the pier, but went to bed at night feeling well: the following morning, 2.12.07, he woke up suffering from extreme giddiness and from deafness and noises in the left ear; the left side of his face was paralysed; no history of vomiting was

obtained; patient stated that giddiness was the worst symptom of all; he also complained of pain in the head and limbs and did not leave his bed for a week; while in bed he sometimes felt as if surrounding objects were moving round him.

When he did get up he had to hold on to various articles of furniture in order to get about the house; he states that he tended to fall to the right side—the side opposite to the ear lesion.

Towards the end of December 1907 the deafness got worse.

Patient's doctor was not consulted till 6th January 1908, and patient was not examined at the Royal Infirmary till 11th February, when he was seen by Dr Logan Turner at the Ear and Throat Department at the request of one of us (A. B.). Dr Turner's notes are as follows:—Tympanic membranes are both slightly indrawn, but are otherwise normal. On the right side the watch is heard at two inches, but on the left it is not heard even on contact with the auricle. Forced whisper heard by right ear at two feet and by left ear at one foot. All tuning forks heard by air conduction by left ear. Rinne's test positive on both sides. On inflation with the catheter air did not enter the left tympanic cavity—right side not tested. Patient can stand with his feet together and eyes shut without swaying, but he is unable to stand on either foot alone without tending to fall. Patient suffers from left facial paralysis, but can taste salt on the anterior part of the tongue on the left side. *Herpes auricularis* was not present: this is interesting, and must be taken along with the retention of the sense of taste on the same side of the tongue. As will be seen from the account of the microscopical examination of the inner ear, the hæmorrhage did not extend beyond the internal meatus and did not involve the facial nerve in the aqueduct of fallopian nor the geniculate ganglion.

The patient was admitted to Dr Bruce's ward on February 18, 1908; on admission he stated that he was giddy, even when lying in bed, but that the giddiness was worse in the open air, especially when passing vehicles.

Examination.—Patient somewhat emaciated; complete left facial paralysis; left eyebrow and left corner of mouth are depressed; no response to the faradic current on the left side of the face; the affected muscles contract slowly to galvanism, but

there is no alteration of the polar reaction ; superficial and deep reflexes present and active ; voluntary movements are weak, and hand grip is weaker on left than on right side ; *arterial walls thickened* ; slight rough presystolic murmur in mitral area ; aortic second sound accentuated and reduplicated. *No evidence of leukaemia.*

Urine, specific gravity 1014 ; otherwise normal.

Lungs, both reveal extensive chronic tuberculosis.

Joints of hands swollen and painful.

The diagnosis made by one of us (A. B.) was that of neuritis of facial and auditory nerves in the internal auditory meatus ; hæmorrhage in this situation was also mentioned as a probable cause of the symptoms. In the *Review of Neurology*, Drs Bruce and Pirie write : "The absence of evidence of middle-ear disease and the retention of the sense of taste, and the associated deafness, giddiness, and facial paralysis indicated that the lesion was probably situated between the side of the pons and the bottom of the internal auditory meatus."

Treatment.—Potassium iodide 10 grs. t.i.d.

Galvanic electricity to left side of face.

Progress.—4.4.08. Giddiness and facial paralysis *in statu quo*.

9.4.08. Irritable dermatitis on legs.

10.4.08. Pot. iod. stopped : aspirine, 10 grs. t.i.d.

12.4.08. Patient still feels very giddy if he sits up in bed.

17.4.08. Patient allowed to get up : does not tend to fall to right as much as formerly. Constant current passed from mastoid to mastoid daily.

24.4.08. Patient sent to Convalescent House ; giddiness still present ; he still suffers from rheumatism.

2.5.08. Patient died suddenly at Convalescent House from syncope this morning.

Post-mortem examination held forty-eight hours after death.

Summary.—Atrophy of second, third, fourth, and sixth cranial nerves on left side. Fatty dilated heart. Chronic

venous congestion of organs. Extensive chronic pulmonary tuberculosis. Subacute interstitial nephritis. Brain shows definite milky thickening of arachnoid over inferior surface of cerebellum and circle of Willis; this condition extends $1\frac{1}{4}$ inches in front of optic chiasma and also to near the tip of the temporal lobe.

Drs Bruce and Pirie (16) found a well-marked Nissl's *réaction à distance* limited to the facial nucleus of the same side only and a small nucleus behind it: the hypoglossal nucleus and the nucleus of the third nerve on the same and opposite sides were intact—thus showing conclusively that the facial nucleus is the only nucleus of the facial nerve.

Examination of Left Inner Ear and Auditory and Facial Nerves.—The left temporal bone was removed at the post-mortem on 4th May 1908, *i.e.* forty-eight hours after death; it was at once placed in 10 per cent. formalin, where it remained till 25th March 1909. The inner ear spaces were then opened (J. S. F.), and the petrous bone was prepared for microscopic examination according to Ruttin's (17) method. The inner ear was decalcified in 10 per cent. nitric acid and 10 per cent. formol for two months—the fluid being changed daily at first. The specimen was then washed for a week in running water, and placed in 70 per cent. spirit for a day or two; next transferred to 90 per cent. spirit for three days (changed) daily; then absolute alcohol for forty-eight hours (changed once); then absolute alcohol and ether for forty-eight hours (changed once); next thin celloidin for one month, and finally thick celloidin for one month. After the thick celloidin had hardened, the superfluous parts were removed and the block cut in the vertical transverse direction, *i.e.* at right angles to the long axis of the petrous pyramid. In all about 600 serial sections were cut—20 μ in thickness—and about 150 were stained with hæmalum and eosin or by van Gieson's method; owing to the want of fixation in Muller's fluid and the prolonged soaking in formol it was found impossible to get good results with the Pal-Weigert method. In spite of the fact that the temporal bone was only obtained forty-eight hours after death it will be seen that the structures of the membranous labyrinth were well preserved. In forming an opinion as to the size of the hæmorrhage in the internal meatus and the condition of the auditory, vestibular, and facial nerves, it is necessary to remember the prolonged

soaking of the specimen in formol solution for the period of nearly one year.

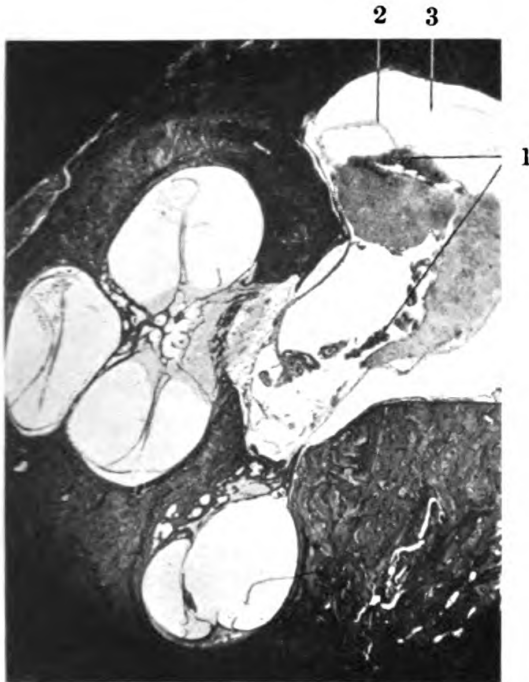
Briefly summed up, the result of the microscopic examination of the inner ear and auditory and facial nerves was as follows:—The inner ear was almost normal: there was no hæmorrhage in the endo- or peri-lymphatic spaces of the cochlea, vestibuli or canals: the membranous labyrinth was also almost normal, as was the spiral ganglion: the neuro-epithelium of the utricle, saccule, and of the cristæ ampullarum was well preserved. In the lower turn of the cochlea Corti's organ was absent or degenerated. The mucous membrane of the middle ear was normal.

As will be seen from the result of Dr Logan Turner's examination of the patient, the case was probably one of chronic progressive (labyrinthine) deafness.

In the internal meatus there was a considerable amount of hæmorrhage between the epineurium and the seventh and eighth nerves: this was most marked above the seventh nerve: there was no hæmorrhage between the dura mater and epineurium. The vessels in the internal auditory meatus were markedly thickened and the muscular coat had undergone a hyaline change. The hæmorrhage did not extend into the Fallopian canal, and did not therefore affect the geniculate ganglion: the modiolus of the cochlea and the small canals for the vestibular nerves were also free from hæmorrhage. Reference to the reproductions of the photomicrographs will demonstrate the pathological condition present better than a more detailed description.

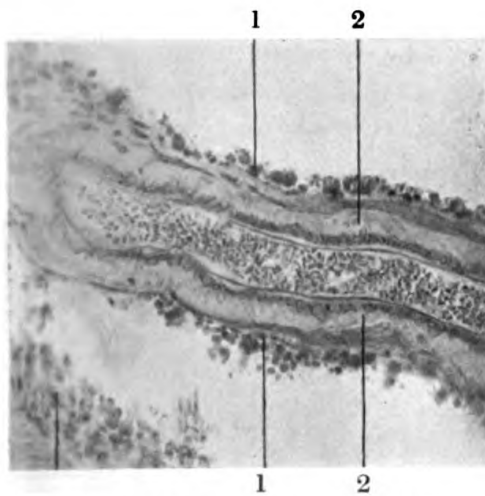
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Vertical Section of Cochlea and Internal Auditory Meatus, showing Hæmorrhage.

1. Hæmorrhage beneath epineurium. 2. Epineurium. 3. Space between epineurium and dura.



Longitudinal Section of Artery in Internal Auditory Meatus.

1. Hæmorrhage. 2. Thickened middle coat of artery.



Facial Nerve (in Fallopian Canal) passing above Cochlea (note absence of hæmorrhage).

1. Facial nerve. 2. Space between epineurium and wall of canal free from hæmorrhage. 3. Middle coil of cochlea. 4. Basal coil.



Seventh and Eighth Nerves in Internal Auditory Meatus.

1. Hæmorrhage beneath epineurium of seventh nerve. 2. Thickened artery. 3. Hæmorrhage around vestibular ganglion. 4. Vein.

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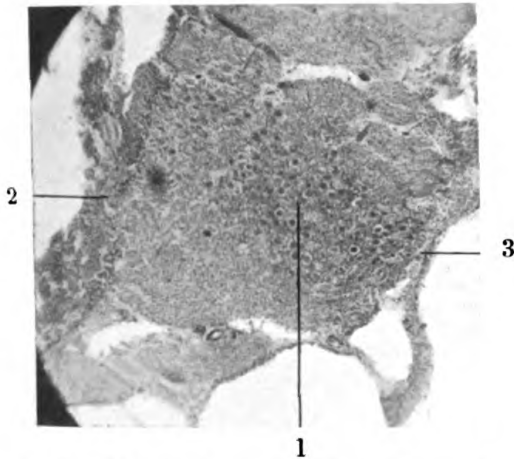
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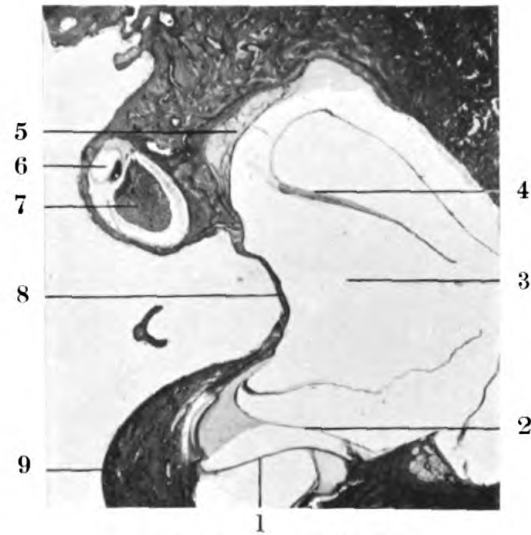
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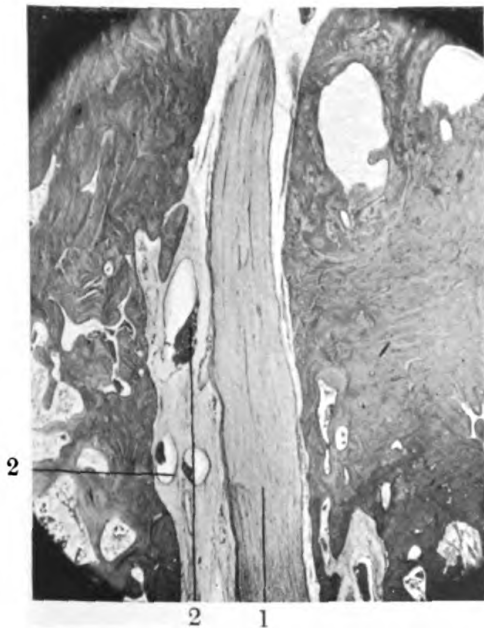


1. Vestibular ganglion. 2. Hæmorrhage. 3. Epineurium.



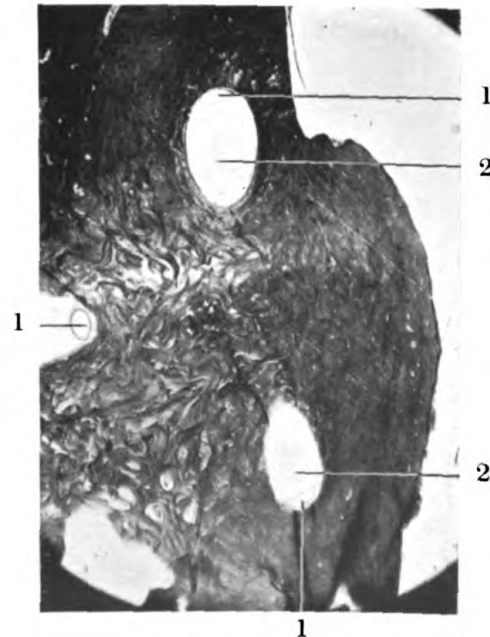
Vertical Section of Vestibule.

1. Membrane of round window. 2. Basal membrane (note absence of Corti's organ). 3. Perilymphatic space of vestibule. 4. Neuro-epithelium of anterior wall of utricle. 5. Branch of vestibular nerve to utricle. 6. Vessel. 7. Facial nerve. 8. Footplate of stapes. 9. Promontory.



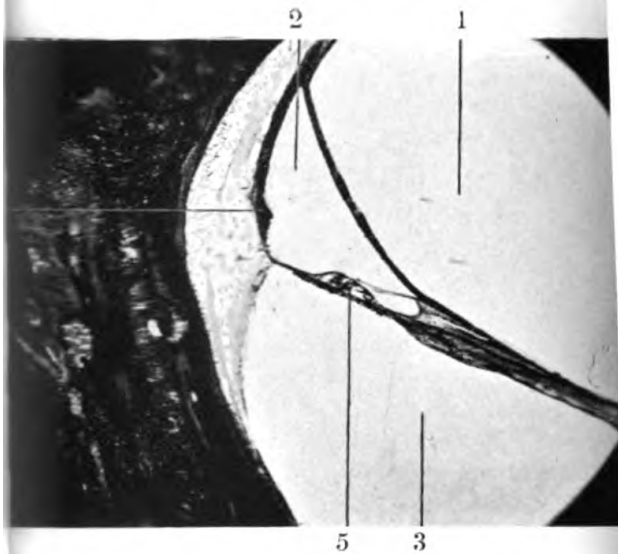
Descending portion of Facial Nerve in Canal of Fallopius.

1. Facial nerve. 2. Vessels.



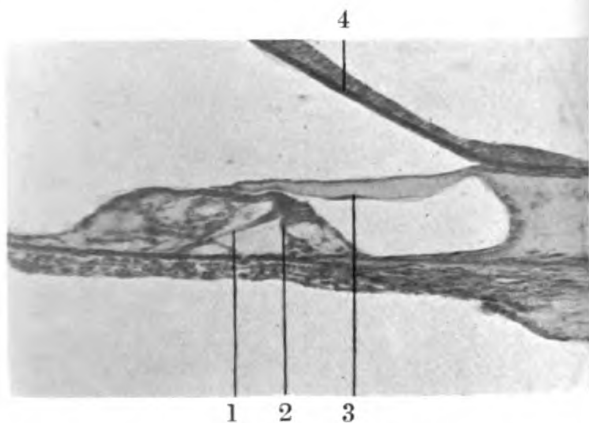
Semicircular Canals, showing absence of Hæmorrhage.

1. Membranous canals. 2. Perilymphatic space.



Three Scalæ of Cochlea from Middle Coil.

1. Scala vestibuli. 2. Scala media (cochlear canal).
3. Scala tympani. 4. Epithelial cells covering stria
vascularis. 5. Basilar membrane.



Corti's Organ from Middle Coil of Cochlea.

1. Outer pillar cell. 2. Inner pillar cell. 3. Mem-
brana tectoria. 4. Reissner's membrane.

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9. Lucae. "Die chron. progress Schwerhörigk." Berlin, 1907.
10. Hillairet. *Mém. de la Soc. de Biol.*, 1861.
11. Kaufmann. *Zeitsch. f. Ohren.*, Bd. 28.
12. Hammerschlag. *Archiv f. Ohren.*, Bd. 45.
13. Moos and Steinbrugge. *Zeitsch. f. Ohren.*, 1881, p. 102.
14. Ramsay Hunt, *Amer. Journ. of the Med. Sciences*, Aug. 1908.
15. Ramsay Hunt. *Journ. of Nerv. and Ment. Dis.*, Feb. 1907.
16. Drs Bruce and Pirie. *Review of Neurology and Psychiatry*, 1908, p. 685.
17. Ruttin's Method. *Verhandl. Oesterr. Otol. Ges.*, 26.11.06.
18. Alt and Pineles. *Wien. klin. Wochenschr.*, 1896, p. 849, showed that Ménière's symptoms may arise in a leukæmic case from infiltration of the acoustic nerve: the middle and inner ears were normal.
19. Steinbrugge. *Deut. Med. Wochenschr.*, Vereinsbeil., 1897. Inner ear spaces and acoustic nerve involved in the leukæmic hæmorrhages and infiltrations.
20. Mott. *Med. Clin. Transact.*, Vol. 83, 1900, found leukæmic infiltration in cochlea and canals.
21. Lannois, "Annal. des Mal. de la Oreille," etc., 1892, found extravasation of blood in vestibule and in canals undergoing organisation: new connective tissue formation in the bony canals: cellular infiltration in scala vestibuli of first turn of cochlea.
22. Parkes-Weber and Lake, *Proc. Roy. Med. and Clin. Soc.*, 1900, found new formation of fibrous and bony tissue in the scala tympani and in the perilymphatic spaces of the canals.
23. Schwabach. *Z. f. O.*, Bd. 31, S. 103. Fifteen cases of leukæmic deafness: five had apoplectiform attacks.
24. Kock. *Z. f. O.*, Bd. 50, S. 431. (Hæmorrhage in cochlea and canals.)
25. Manasse, *Z. f. O.*, Bd. 52, examined thirty-one inner ears from cases of nerve deafness, and found two with evidences of labyrinthine hæmorrhages in addition to degenerative changes.
26. Finlayson, *B. M. J.*, Dec. 31, 1898, page 1925, records another leukæmic case with hæmorrhage in vestibule and first turn of cochlea.
27. Moos. *Virchow's Archiv*, Bd. 69, S. 313. Syphilitic patient: Ménière's symptoms engrafted on existing ear disease: periostitis in vestibule: small cell infiltration of membranous labyrinth.
28. Haug. "Die Krankheiten des Ohres in ihren Beziehungen," etc., 1893. Tabetic case—the acoustic nerve-ganglion and accessory ganglia were affected.
29. Fraser. *Journal of Laryngology*, Aug. 1909.

Abstracts

ANATOMY.

THE ARCHITECTONIC STRUCTURE OF THE TEMPORAL
 (304) **CORTEX AND ITS RELATION TO HEARING.** (Sur
 l'architecture de l'écorce temporale et son rapport avec
 l'audition.) MARINESCO and GOLDSTEIN, *L'Encéphale*, May 10,
 1910, p. 513.

THE object of this paper is to endeavour to determine the cyto-architectonic features of the temporal lobe, and in particular to discuss the question of the localisation of the cortical auditory centre. Neither the experimental nor the anatomo-clinical method of determining the site of the cortical auditory centre has proved particularly satisfactory, especially from the point of view of exact localisation, and the authors believe that light may be thrown on the matter from the architectonic standpoint. They quote from various investigations (Brodmann, Vogt, Campbell, Rosenberg, etc.) to show that unanimity as to the histological structure of the temporal convolutions and convolutions of Heschl is far from being attained.

The six layers which are taken for descriptive purposes as constituting the temporal cortex are: (1) the zonal layer, (2) the small pyramidal cell layer, (3) the superficial pyramidal cell layer—in this are distinguished two subdivisions, (*a*) small and medium pyramidal cells, and (*b*) large pyramidal cells—(4) the granular layer, (5) the deep layer of pyramidal cells, (6) the polymorphic cell layer, which in its turn is sometimes subdivided. A detailed description is given, with measurements, of the variations these layers undergo in the different parts of the temporal lobe.

The second part of the paper is taken up with a discussion of the relation of structure to function, but the authors fortunately do not dogmatise. They believe there are auditory centres differing in function as they do in structure; that they are situated chiefly in the transverse temporal convolutions of Heschl, and that the area they occupy is more limited in man than in other animals.

S. A. K. WILSON.

COMPARATIVE HISTOLOGICAL STUDY OF STILLING'S
(305) SACRAL NUCLEUS. (Vergleichend histologische Untersuchungen über den Nucleus sacralis Stillingi.) P. SCHILDER,
Arb. a. d. Neurol. Instit. a. d. Wien. Univ., Bd. xviii., H. 2, S. 195.

THE author has examined Stilling's sacral nucleus in the human cord and in those of a number of animals. He has come to the conclusion that in it both Clarke's cells and middle cells are represented, and that it is largest where it contains both cell forms. He claims also to give support to Reich's view that the middle cells and Clarke's cells have a like, or at all events similar, function. He remarks incidentally on the difficulties of sharply delimiting Clarke's cells and other groups, especially in the sacral cord, where the different cells closely resemble one another and the cell-groups are seldom sharply defined. The sacral nucleus may extend into the upper sacral segments or lie only in the middle and lower ones; as regards Clarke's column, it was always found displaced somewhat ventrally, but no cells lying in front of the plane of the anterior surface of central canal belong to it. In man the nucleus consists of a mixture of cells of the type of Clarke's cells and of middle cells; in many animals cells of intermediate types were found, either like miniature Clarke's cells or magnified middle cells, and the proportions of the various kinds of cells in the nucleus varied enormously. Occasionally the nucleus was divided into two groups—a dorsal and a ventral.

J. H. HARVEY PIRIE.

THE ORIGIN OF THE SENSORY COMPONENTS OF THE
(306) CRANIAL GANGLIA. F. L. LANDACRE, *Anat. Rec.*, Feb. 1910.

THE author confines himself to the inquiry as to what support the mode of origin and morphological relations of cranial ganglia in *Ameiurus* give to Herrick's analysis of cranial and spinal nerves from the functional standpoint.

The arrangement of ganglia is the same in *Ameiurus* as in *Menidia*, except that the ninth in *Ameiurus* contains a special somatic ganglion absent in *Menidia*. In the head, as in the cord region, the general somatic and the general visceral components of the ganglia are derived from the neural crest. The chief interest lies in the mode of origin of special somatic and special visceral ganglia peculiar to the head region.

The special visceral, or gustatory, ganglia are derived from the epibranchial placodes in *Ameiurus*. Therefore, special visceral and

general visceral systems have not only different types of fibres and separate distributions in the adult, but a different mode of origin in the embryo. The special somatic, or acustico-lateralis, system differs in its history. The lateralis tenth is derived from a dorso-lateral placode, which is a posterior extension of the auditory vesicle. The lateralis ninth and the auditory seem to come exclusively from the auditory vesicle, but it is difficult to be certain of their purely placodal origin. They may represent a transition between the purely placodal lateralis tenth and the lateralis ganglia associated with the geniculate of the seventh, which come entirely from the neural crest.

E. B. JAMIESON.

EXPERIMENTAL RESEARCHES ON THE MORPHOLOGICAL
 (307) **MODIFICATIONS OF THE NERVE CELLS OF HIBERNATING ANIMALS.** (*Ricerche sperimentali sulle modificazione morfologiche delle cellule nervose negli animali ibernanti.*) M. ZALLA, *Riv. di Pat. nerv. e ment.*, Vol. xv., F. 4, p. 211.

MAMMALS, amphibia, and reptiles were examined in the hibernating and waking states. In reptiles and amphibia in the hibernating stage a marked diminution of chromatin was found in the nerve cells, and where it was still present it presented the appearance of long threads forming a network. The endocellular neurofibrils showed marked thickening. In mammals there is no difference between the chromatin distribution of the nerve cells in the waking or hibernating stage. The neurofibrils in the hibernating mammal show, however, marked thickening.

By keeping summer reptiles in ice it was possible to induce the same conditions as are found during hibernation in their nerve cells.

F. GOLLA.

THE STAINING OF MEDULLATED SHEATHS IN FROZEN
 (308) **SECTIONS.** (*Markscheidenfärbung am Gefrierschnitt.*) W. SPIELMEYER, *Neurol. Centralbl.*, April 1910.

IN this article the author describes a method of staining medullated nerve fibres in frozen sections both of spinal cord and cerebral cortex. The details of the procedure are very similar to those followed in Heidenhain's iron-haematoxylin stain:—

1. Place the frozen sections, from formol-fixed tissue, in 2½ per cent. solution of iron-ammonium sulphate for twelve hours.

2. Wash in water, and immerse in 80 per cent. alcohol for five minutes.

3. Stain in a well-ripened hæmatoxylin solution (10 parts of 10 per cent. alcoholic hæmatoxylin solution to 100 parts of distilled water) for twelve hours.

4. Wash in water, and differentiate in the iron-ammonium solution; replace in the stain, and differentiate several times.

5. Wash; dehydrate; xylol; balsam. Special emphasis is laid on the necessity of the repeated staining and differentiation, and of the use of the spirit after the mordanting in the iron-ammonium solution. The time for staining may be shortened or lengthened, and the differentiation controlled, under low-power objective. Frozen sections thus stained have been obtained not less satisfactory than celloidin sections stained by the Kulschitzky-Wolters method, and the author points out the value of having sections, from the same block, which can be stained by the different elective methods to bring out the medullated sheath, axis-cylinder, neuroglia, cell and nucleus, or fat. JAMES W. DAWSON.

PHYSIOLOGY.

THE FUNCTIONS OF THE KINÆSTHETIC AREA OF THE BRAIN.

(309) H. CHARLTON BASTIAN, *Brain*, March 1910, p. 327.

THERE are three views in regard to the function of the Rolandic area, viz., (1) that of Ferrier and many others, that it contains the actual motor centres for the production of voluntary movement; (2) that of Munk and Bastian, that it is a sensory centre for registering the complex set of impressions (kinæsthetic) occasioned by movement; (3) that of Hughlings-Jackson and of Horsley, that it is sensori-motor. The object of this communication is mainly to show that the second and third views are quite different from one another, although Horsley has recently written as if they were identical. Dr Bastian's view in regard to voluntary movements is, that the last link in the chain of association which is to be immediately followed by the occurrence of movement is revival in idea of the movement to be executed, *i.e.* a memorial recall, more or less conscious, in kinæsthetic and other centres, of the sensations previously experienced on the occurrence of such movements. There then occurs the outflowing stimulus from this sensory centre probably into the pyramidal cells and thence along their (internuncial) fibres in the pyramidal tract to the related real motor centre. It is, in fact, a process more complex than, but otherwise similar to, that which occurs when a stimulus passes from the sensory side of a simple spinal arc to its associated set of motor cells. It is, of course, true that parts (the so-called cortical motor area) of the kinæsthetic area are "out-going" stations, while others

—much wider—are receptive. The kinæsthetic centres are, however, none the less worthy of the name of “sensory,” although their emissive or out-going fibres pursue a long course in a downward direction rather than in an upward or horizontal one. This centre is important not merely in regard to the initiation of voluntary movements, but because its impressions enter inextricably into most of our mental processes, there being, in the writer’s opinion, no conscious ideal recall in any motor centre, and no such thing as any “motor” or “sensori-motor” centres in the cerebral cortex.

J. H. HARVEY PIRIE.

ACTION OF ACONITINE (AND OF ITS DERIVATIVES BENZ-(310) ACONINE AND ACONINE) UPON ISOLATED NERVE AND UPON ISOLATED MUSCLE, WITH A REFERENCE TO THE ACTION OF VERATRINE AND PROTOVERATRINE UPON NERVE AND MUSCLE AFTER THE SUBCUTANEOUS INJECTION OF THESE ALKALOIDS. A. D. WALLER, *Quart. Journ. of Exper. Physiol.*, iii., 1910, p. 97.

WALLER has for many years been investigating the action of certain alkaloids on isolated nerve and on muscle. In the present paper he groups and reviews a number of his past experiments (at the same time furnishing in illustration certain hitherto unpublished tracings), so as to establish a comparison between the respective toxicity of related alkaloids and to throw light on the phenomena associated with nerve activity. His paper is not well suited for a short abstract. Some points, however, especially in relation to nerve, may be summarised.

He repeats his adherence to the original view of Hering that the negative (electrical) variation accompanying nerve activity signifies chemical disintegration, the succeeding positive or reverse change reintegration. The effect of aconitine and of protoveratrine on the electrical change of nerve is to impede the positive after-change while not appreciably affecting the original negative variation—*i.e.* these substances impede reintegration. (This reminds one exactly of the finding of Tait and Gunn in regard to the action of yohimbine on nerve. See this *Review*, Vol. vii., p. 351).

Aconitine and its derivatives have all the same kind of action on nerve. They differ, however, in relative toxicity.

JOHN TAIT.

PATHOLOGY.

PATHOLOGICAL ANATOMY OF PARALYSIS AGITANS. (Beitrag (311) zur pathologischen Anatomie der Paralysis Agitans.) RATNER, *D. Ztschr. f. Nervenheilk.*, Bd. 38, 1910, S. 480.

RATNER describes the pathological appearances in a case of paralysis agitans occurring in a woman of 51, who had well-marked bilateral tremor and rigidity. The left knee-jerk and both Achilles-jerks were absent. At the autopsy, on staining the cord by Pal's method, there was increase of the glia with some pallor in the lateral columns, and in the oval fields of Flechsig in the posterior columns. Glia cells were also in excess in the grey matter, and the anterior cornual cells, by the Nissl method, showed various granular and pigmentary changes. The cerebral cortex in the region of the central fissure, stained by Pal's method, is said to have shown wasting of the tangential fibres, whilst the pyramidal cells showed tigrolysis less marked than in the cornual cells. The ulnar nerve was also examined by the Pal method, and showed pallor of the medullary sheaths, with atrophy of axis-cylinders both in the central and peripheral parts of the nerve.

PURVES STEWART.

THE SYNDROME OF THE NUCLEUS OF DEITERS (BONNIER'S (312) SYNDROME). (Contribution à l'étude du syndrome du noyau de Deiters (Syndrome de Bonnier).) GABRIEL CHÈZE. Lyon: Imprimeries réunies, 1908, pp. 70. Fr. 3.

THE conclusion arrived at by the author in this study of the anatomy, physiology and pathology of Deiters' nucleus are as follows:—(1) The terminal nuclei of the vestibular nerve consist of two separate parts of grey matter lying at the junction of the medulla and pons. One, the inner dorsal nucleus, is sharply enough defined; the other, ill-defined, is Deiters' nucleus, continuous uninterruptedly with the nucleus of Bechterew and united by a continuous bridge of grey matter with the cerebellar roof nucleus. (2) Just as does the cochlear nerve and its organs of origin (utricle, saccule and semicircular canals), so do the terminal bulbar nuclei have to do with equilibration and motor-co-ordination. (3) From the nuclei of Deiters and Bechterew numerous nerve fibres come off in connection with reflex movements; the two chief bundles leaving these nuclei are (*a*) a descending vestibulo-spinal bundle which can be traced to the lumbar cord, and whose fibres terminate all down the cord in the

anterior horn of the same side. *En route*, this bundle gives off fibres to all the terminal nuclei and nuclei of origin of the bulbar sensory and motor nerves; (b) an ascending vestibulo-mesencephalic bundle which ends in the oculo-motor nuclei. (4) Physiologically these connections form reflex paths indispensable for equilibration and co-ordination of all movements, but especially for conjugate movements of the eyes, for the maintenance of the upright position, and for walking. (5) It has long been known that injuries of the dorsal part of the pons and medulla give rise, amongst other troubles, to distinct signs of faulty equilibration, vertigo, lateropulsion, and that, without any cerebellar lesion. (6) This defective equilibration may be attributed to a lesion of the nucleus of Deiters or of the complex system of connections emanating from it. (7) It appears legitimate to group, as Bonnier has done, the different bulbo-pontine symptoms, due to lesions of the various nuclei round the constant and well-defined symptoms—vertigo or troubles of equilibration.

J. H. HARVEY PIRIE.

THE LOCALISATION OF TETANUS TOXINE IN THE BULBO-

(313) **PONTINE REGION.** (*Sur la localisation de la toxine tétanique dans la région bulbo-protuberantielle.*) J. TROISIER and G. ROUX, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, xxviii., 1909, p. 510.

TROISIER and Roux, following Guillain's method, produced experimental tetanus in a guinea-pig by intracranial injection of an emulsion containing the masticatory nuclei from a fatal case of tetanus in a child. Emulsions of the anterior bulbo-pontine region and lumbar cord produced no effect. This experiment seems to prove that the tetanus toxine is fixed in the masticatory nuclei, a fact which explains the predominance of the tetanic contracture in the motor area of the trigeminus.

J. D. ROLLESTON.

COMPARATIVE INVESTIGATIONS ON WASSERMANN'S RE-

(314) **ACTION, LYMPHOCYTOSIS, AND GLOBULIN REACTION IN DISEASES OF THE NERVOUS SYSTEM.** (*Vergleichende Untersuchungen über Wassermannsche Reaktion, Lymphozytose und Globulin Reaktion bei Erkrankungen des Nervensystems.*) A. WOLFF, *Deut. med. Wchnschr.*, April 21, 1910, S. 748.

THE research was carried out on 100 cases, comprising 40 cases of tabes dorsalis, 30 cases of general paralysis, 9 cases of cerebrospinal lues, 5 cases of cerebral apoplexy, 4 cases of alcoholic neuritis, 6 cases of neurasthenia, and 6 cases of epilepsy.

After briefly referring to the technique employed in carrying out the investigations regarding the lymphocytosis in the cerebro-spinal fluid and the globulin reaction, the writer analyses his results, and gives in some detail noteworthy cases from the first four conditions to which reference has been made.

The conclusions drawn from the research are:—

1. The three reactions investigated are a valuable aid in the differential diagnosis of neurological conditions.

2. Of the three the globulin reaction gives the best results, for, even though it is not always constantly present, and even when present it may not have any conclusive influence on the diagnosis, it is more applicable, in that it is positive only in cases where para- and meta-syphilitic nervous lesions are present; whereas the deviation of complement and the lymphocytosis tests may give positive findings in those cases of syphilis in which the syphilitic infection is not giving rise to disease of the nervous system.

3. If syphilis be excluded, from the number of the lymphocytes and the globulin reaction, together with the rest of the clinical features, valuable conclusions can be drawn, in that positive findings indicate organic and negative findings indicate peripheral or functional nervous affection.

4. Conclusion 3 is of especial value in differentiating incipient cases of tabes and general paralysis from other conditions.

5. Deviation of complement by the cerebro-spinal fluid in cases of tabes and general paralysis is often absent, and hence this test seems of least value. The number of cases investigated by the author were too few to either confirm or disprove the contentions of those investigators who affirm that a negative finding points rather to tabes or general paralysis as opposed to cerebro-spinal lues.

6. In cases of so-called periodic vomiting (v. Leyden), with no other symptoms of affection of the central nervous system, the presence of complement deviation with lymphocytosis and a positive globulin reaction may point towards the central origin of the condition.

F. E. REYNOLDS.

PRESENCE OF THE TREPONEMA IN THE CEREBRO-SPINAL

(315) **FLUID IN SYPHILITIC HEMIPLEGIA.** (*Constatation du tréponème dans le liquide céphalo-rachidien au cours de l'hémiplégie syphilitique.*) A. SÉZARY and H. PAILLARD, *C. R. de la Soc. de Biol.*, lxxviii, 1910, p. 295.

A WOMAN, aged 33, was admitted to the Hôtel Dieu in a comatose state with left hemiplegia, the body covered with a syphilitic

eruption, the diffuse nature of which proved that infection had occurred within the last twelve months. She had previously visited the St Louis Hospital at irregular intervals for specific treatment. In addition to numerous leucocytes, the cerebro-spinal fluid showed after quarter of an hour's search with the ultra-microscope a solitary but absolutely typical treponema, which preserved its motility for four hours. No other specimens were found after prolonged examination. No autopsy was made. This is the first case on record in which the treponema has been found during life in the cerebro-spinal fluid of a patient suffering from acquired syphilis of the nervous system. The writers allude to Gaucher and Merle's case (v. *Review*, 1909, p. 427), in which the organism was not found until twenty-four hours after death, and to that of Dohi and Tanaka, in which it was found in a case of secondary syphilis, without obvious nervous symptoms. (Dupérié's case is not mentioned, v. *Review*, 1910, p. 54.—J. D. R.)

J. D. ROLLESTON.

CLINICAL NEUROLOGY.

OCCUPATION NEURITIS OF THE THENAR BRANCH OF THE (316) MEDIAN NERVE. (A well-defined Type of Neural Atrophy of the Hand.) J. RAMSAY HUNT, *Amer. Neurol. Assoc.*, 1910.

A well-defined clinical type of atrophy of the hand may result from compression of the thenar branch of the median nerve as it emerges from beneath the annular ligament of the wrist. This thenar branch is purely *motor*, and innervates the abductor pollicis, opponens pollicis, and the outer head of the flexor brevis pollicis. It is characterised clinically by a sharply defined thenar atrophy, limited to the distribution of the median nerve. The thenar eminence presents a scooped-out depression, lying between the outer border of the first metacarpal bone and the inner head of the flexor brevis pollicis muscle.

There are present also, the reactions of degeneration in the affected muscles; and *objective sensory disturbances in the distribution of the median nerve are absent*. This type of atrophy interferes very little with general usefulness of the hand, as the other muscle groups are unaffected. The handwriting may suffer considerably.

In connection with the *neural* atrophy of the hand muscles without sensory disturbances of median nerve origin (thenar type), Dr Hunt calls attention to another well-defined group of occupation atrophies of the hand described by him (*Journ. Nerv. and Ment. Dis.*, 1908), which is dependent upon a compression

neuritis of the deep palmar branch of the ulnar nerve as it passes between the tendinous origins of the abductor minimi digiti and the flexor brevis minimi digiti (hypothelar type).

In this type all the intrinsic muscles of the hand are paralysed, with the exception of those supplied by the median nerve. In the hypothelar type, objective sensory disturbances are also absent, the deep palmar branch of the ulnar being *motor*. The importance of these two types of compression (motor) neuritis is very much increased from the resemblance which they bear to certain forms of the Aran-Duchenne type of spinal atrophy. This resemblance is enhanced by the well-known fact that progressive muscular atrophy, beginning in the small muscles of the hand, is not infrequent in connection with occupations necessitating an over-activity of these muscles.

AUTHOR'S ABSTRACT.

CERTAIN VASOMOTOR, SENSORY, AND MUSCULAR PHENOMENA ASSOCIATED WITH CERVICAL RIB. WM. OSLER,
(317) *Amer. Journ. of the Med. Sciences*, April 1910, p. 469.

THE author reports the case of a woman aged 31, who complained of "pins and needles" in the left arm after moderate exertion, and on continuing to use the arm the further development of redness of the skin, swelling of the arm, and in a short time inability to use the arm further. When the arm is at rest there are no symptoms. Pulsation above both clavicles was apparent, but no other physical sign. No wasting or sensory loss in the arm or hand. X-ray examination showed bilateral cervical ribs. The author refers to two other cases, which had presented analogous but more pronounced symptoms, but in which, at the time they were seen, cervical ribs had not been suspected, though almost certainly the cause of the symptoms. He regards the disability and other manifestations on exertion as analogous to the symptoms of intermittent claudication, the vascular obstruction being caused by the subclavian artery being "hooked up" over the cervical rib.

C. M. HINDS HOWELL.

LATE GENERALISED DIPHTHERITIC PARALYSIS OF LONG DURATION IN SPITE OF INTENSIVE SEROTHERAPY.
(318) (Paralysie diphtérique tardive généralisée, longtemps rebelle malgré la sérothérapie intensive.) C. LESIEUR, J. FROMENT, and COLOMBET, *Lyon Méd.*, cxiv., 1910, p. 607.

A MAN, aged 41, four weeks after an attack of diphtheria, which was not treated with antitoxin, developed palatal and subsequently

generalised paralysis. In the course of the next three months he received thirty-seven subcutaneous, sixteen rectal, and two intravenous injections of antitoxin. Each subcutaneous injection was followed by a rise of temperature and a painful swelling at the injection site, and the rectal injections gave rise to colic and constipation. In spite of his heroic treatment recovery did not take place till six months after the onset of the disease. The long duration of the paralysis is attributed to the persistence of diphtheria bacilli in the nose and throat. Local application of antitoxin was ineffective.

J. D. ROLLESTON.

THE PATHOGENY OF DIPHTHERITIC PARALYSIS. (Sur la (319) pathogénie des paralysies diphtériques.) C. LESIEUR, *Lyon Méd.*, cxiv., 1910, p. 611.

DIPHTHERITIC paralysis presents great differences, not only in its pathological anatomy, symptomatology, and prognosis, but also in its pathogeny and consequently in its therapeutical indications. Probably the persistence of diphtheria bacilli in the nose or throat plays an important part in the production of nervous sequelæ. Lesieur and Chatri recently performed an autopsy on a child who died of generalised diphtheritic paralysis. Cultures were taken from different parts of the nervous system and inoculations made with emulsions according to Guillain's method, but the results were uniformly negative. In view of the profound asthenia presented by the child, the question arose as to whether death was not due in part to acute suprarenal insufficiency.

J. D. ROLLESTON.

THE PATHOLOGICAL PHYSIOLOGY OF DIPHTHERITIC (320) **PARALYSIS.** (Physiologie pathologique des paralysies diphtériques.) G. GUILLAIN and G. LAROCHE, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, xxviii., 1909, p. 441.

A MAN, aged 23, after a severe attack of diphtheria, treated with anti-toxin, developed palatal paralysis, followed by ciliary and cardiac palsies, which terminated fatally in spite of further injection of anti-toxin. At the autopsy a macroscopical examination of the central nervous system showed no special lesion. The cerebro-spinal fluid was clear and free of cellular elements, while its injection into the cranial and peritoneal cavities of guinea-pigs was without effect. On the other hand, the following experiments showed that the diphtheria toxins were located in certain parts of the bulb. The bulb and cervical cord were washed

twenty-four hours in running water to remove any traces of blood which might contain toxine. A portion of the bulb containing the vagus nuclei was then removed with a sterile scalpel, ground up in a sterile mortar, triturated with normal salines, and injected into three guinea-pigs. The first received $\frac{1}{4}$ c.c. of the emulsion as an intracranial injection at 4 p.m. one day, and died the following night; the second received $\frac{1}{2}$ c.c. as an intraperitoneal injection, and died in thirty hours; and the third had a subcutaneous injection of $\frac{1}{2}$ c.c. in the right hind leg, and died in seventy-two hours. Similar injections made with emulsions of the cervical cord and anterior pyramidal region of the bulb into control animals produced no effect.

To determine whether diphtheria toxine could attach itself to nervous tissue, the following experiment was carried out:—Small fragments of the brain, cerebellum, bulb, and cord were washed free of blood, and put in contact with diphtheria toxine for sixteen hours, then treated with normal saline and injected into guinea-pigs. Death followed inoculation by intracranial, subcutaneous, and intraperitoneal routes. Control animals inoculated with nerve substance free from toxine remained unaffected.

The writers conclude that these experiments prove more clearly than does pathological anatomy the central origin of diphtheritic paralysis in man.

J. D. ROLLESTON.

NEUROFIBROMA. (Zur Kenntnis der "Neurofibrome.") VEROCAÿ, (321) *Beitr. z. path. Anat.*, Bd. 48, H. 1, 1910, S. 1.

AFTER emphasizing the different views regarding the nature of these tumours, and reviewing the literature up to date, the author gives details of a case which came under his own observation and which he examined carefully after death.

The case was that of a male, æt. 31 years, with symptoms of a cerebellar tumour and deafness. At the autopsy there was found diffuse purulent meningitis of brain and cord; multiple tumours on the inner aspect of the cerebral dura with the microscopic characters of endotheliomata, tumour nodules (gliomata), in the medulla and pons, nodular thickenings of the cranial nerves, the spinal roots, and more especially the cauda equina; numerous tumours varying in size in the peripheral nerves.

He concludes that the tissue of the multiple nerve tumours which has hitherto been regarded as connective tissue is not connective tissue, but of nervous origin arising from the nerve fibre cells or their embryonic equivalent. He suggests that the term *neurinoma* should be substituted for the one at present in use.

The frequent finding of ganglion cells in these tumours is quite

in keeping with this view, also the occurrence of gliomas in the central nervous system. The whole process probably depends upon an early disturbance in embryonic development of the specific elements of the nervous system implicating cells capable of producing ganglion, glia and nerve fibre cells.

JAMES MILLER.

ACUTE POLIOMYELITIS. (*La Poliomyélite aiguë. Étude épidémiologique.*) E. JOB and J. FROMENT, *Rev. de Méd.*, March 1910, p. 162.

A SUMMARY of the bacteriology of, and recent animal experimentation on, acute poliomyelitis. A brief history of the various epidemics which have occurred, and a consideration of the various secondary causes playing a part in the etiology of the disease.

J. H. HARVEY PIRIE.

EXPERIMENTAL STUDY OF ACUTE POLIOMYELITIS. (*L'Étude expérimentale de la poliomyélite aiguë.*) C. LEVADITI, *Presse méd.*, April 23, 1910, p. 297.

A SUMMARY of the facts established experimentally concerning the evolution of the disease and the lesions produced, with some illustrations from the writer's own work.

J. H. HARVEY PIRIE.

EXPERIMENTAL EPIDEMIC POLIOMYELITIS IN MONKEYS. (324) S. FLEXNER and P. A. LEWIS, *Journ. of Exper. Med.*, March 1910, p. 227.

THIS communication gives in greater detail an account of the writers' earlier experiments. Notes of these have already appeared in the *Journ. of the Amer. Med. Assoc.*, and have been noticed in this *Review* (pp. 176 and 236).

J. H. HARVEY PIRIE.

EXPERIMENTAL POLIOMYELITIS (SIXTH NOTE.) (*Characteristic Alterations of the Cerebro-Spinal Fluid and its Early Infectivity ; Infection from Human Mesenteric Lymph Node.*) FLEXNER and LEWIS, *Journ. Amer. Med. Assoc.*, April 2, 1910, p. 1140.

THE previous note indicated the naso-pharynx as a probable route of infection. Since then the writers have succeeded in infecting a monkey by this route.

Changes in the meninges and cerebro-spinal fluid begin immediately after inoculation and are thus present several days before the onset of paralysis. After twenty-four hours the fluid is normal in quantity, but contains a considerable number of small cells, a little bigger than lymphocytes, but with polyform nuclei, a few lymphocytes, and some red cells. After forty-eight hours the white cells are increased, but those with polyform nuclei still predominate. After three days there are many mono-nuclear cells and the fluid is opalescent. At this stage, several days in advance of the paralysis, the fluid contains active virus, capable of setting up the disease in other animals. The cord shows commencing meningeal infiltration. By the day of paralysis the fluid is only slightly cloudy, but contains a mixture of larger and smaller (lymphoid) mononuclears and a few cells with polymorph nuclei.

The disease has been produced in a monkey by the intracerebral injection of emulsified mesenteric lymph node from a fatal acute human case.

J. H. HARVEY PIRIE.

EXPERIMENTAL EPIDEMIC POLIOMYELITIS IN MONKEYS

(326) (SEVENTH NOTE ; ACTIVE IMMUNIZATION AND PASSIVE SERUM PROTECTION). S. FLEXNER and P. A. LEWIS,
Journ. Amer. Med. Assoc., 1910, No. 22.

IN this note the authors report success in the production of active immunity by subcutaneous injection of gradually increasing doses of the virus over a period of several months.

It was early observed that monkeys which recovered from the paralysis were insusceptible to reinoculation, *i.e.* they had developed an artificial immunity. The immunity principles in their blood are found to be capable of neutralizing the virus *in vitro*. Blood serum from children which have recovered also seems to have the same power, although sufficient time has not yet elapsed to be certain that the development of the paralysis is not merely delayed. They have failed, however, to produce any neutralizing serum in the horse by repeated injections of virulent filtrate. Another series of experiments consisted in the intracerebral injection of active virus and injection of reinforced immune serum next day. In others the internasal mode of inoculation was employed, and the serum treatment instituted immediately. These experiments, of a preliminary character, appear to indicate (1) that if the quantity of virus injected into the brain eighteen to twenty-four hours before the serum treatment is begun is not in excess of a given dose, the action of the virus can be prevented ; (2) that

the infection of the meninges from the nasal mucosa can also be prevented by the serum injections; (3) that normal monkey serum has no such restraining effect; (4) that horse serum is entirely without preventive action, and tends rather to hasten the onset of paralysis.

In view of the fact that the virus can enter the system through the abraded nasal mucosa, it is interesting to note that they find the virus is quickly destroyed by a solution of 1 per cent. hydrogen peroxide.

J. H. HARVEY PIRIE.

ON FILTERABLE VIRUS, AND ON THE NATURE OF ACUTE

(327) **POLIOMYELITIS.** (Ueber filtrierbares Virus und über das Wesen der Poliomyelitis acuta.) R. KRAUS, *Med. Klinik*, März 20, S. 470.

THIS paper is merely a brief sketch of the various diseases now known to be caused by a filterable virus, the characteristics of such virus, and in particular of that one which produces acute poliomyelitis.

J. H. HARVEY PIRIE.

NERVOUS LESIONS AND MUSCULAR ATROPHY IN MONKEYS

(328) **AFFECTED WITH ACUTE POLIOMYELITIS.** (Lésion nerveuse et atrophie musculaire chez les singes atteints de paralysie infantile.) C. LEVADITI and V. STANESCO, *Comptes rendus de la Soc. de Biol.*, April 22, 1910, p. 664.

EXAMINATION of monkeys paralysed 21, 29, and 67 days respectively revealed the following changes:—The alterations in the vessels of the white matter and of the meninges had disappeared; they only remained in the grey matter. There was no polynuclear leucocyte infiltration as in the acute stage, only a chronic inflammation characterised by mononuclear cells, diffuse or round the vessels of the grey matter. The posterior horns are practically spared. The cervical and dorsal regions of paraplegic monkeys are unaffected, but, on the other hand, the medulla still shows acute lesions. The virus seems to have a special affinity for the lumbar cord and the medulla; even when it is inoculated intra-cerebrally the affection usually begins in the lumbar cord. Muscular atrophy and degeneration of the corresponding nerves occur just as in human subjects.

J. H. HARVEY PIRIE.

ELECTRICAL TREATMENT OF INFANTILE PARALYSIS. (Con-
(329) siderations sur le traitement électrique de la paralysie infantile.)
A. ZIMMERN and BORDET, *Journ. de med. de Paris*, April 16, 1910,
p. 271.

THESE authors consider that electricity is the only physical agent which can cause a contraction of muscle analogous to a voluntary one, and so help to bring back function and combat atrophy. Massage and re-education they consider only aid the least affected and unaffected muscles. Electricity has also an indirect effect through its stimulation of the muscles on those cells of the cord which still remain alive, and a tendency to cause hypertrophy of the muscular fibres still remaining.

With regard to its mode of application, a detailed electro-diagnosis is the first essential; then use whatever kind of current it is found that the muscles will react to, endeavouring to produce that contraction most nearly like the normal. The muscles should be stimulated first singly, and then in groups. The seances should last about one hour daily, or, perhaps better, twenty minutes thrice daily, and be followed by complete rest. They should begin about the fifteenth day, and must be continued, with short holidays, for one, two, or even three years, until it is found that there is no further improvement, then education of the supplementary muscles is justifiable. It is of no use applying electricity to the spine—to reach the cord too strong currents must be used, and even then it is doubtful if they are of any service. To apply one pole over the spine and the other to the paralysed limb is harmful, as it accentuates the over-action of the opponents, and tends towards the development of contractures.

J. H. HARVEY PIRIE.

RECENT OBSERVATIONS ON TUMOURS OF THE BRAIN AND
(330) **THEIR SURGICAL TREATMENT.** HARVEY CUSHING,
Lancet, Jan. 8, 1910, p. 90.

IT is much to be desired, in Cushing's opinion, that operators who undertake intracranial surgery should have fitted themselves to look upon intracranial maladies from the same point of view, and with the same understanding, if possible, as the neurologist.

Intracranial tumours may be grouped clinically into four groups: (1) tumours giving rise to none of the supposed characteristic symptoms; (2) tumours producing pressure symptoms alone; (3) tumours producing focal symptoms alone; (4) tumours giving rise to both general and focal symptoms.

The term choked disc should, in the author's opinion, be employed to include the changes met with in the optic disc from

the early stage of engorgement to the terminal atrophy. Optic neuritis and papillitis are misleading terms, since they imply an inflammatory or toxic process, recent clinical and experimental observations indicating that the process is, after all, largely mechanical. The following are among the arguments in favour of this view:—(1) It has been found possible to reproduce experimentally the early stages of a choked disc by the introduction of fluid under pressure into the subdural space. (2) If the choked disc has not progressed to the stage of extensive new tissue formation, its subsidence can usually be assured by a decompression operation, the swelling subsiding more rapidly on the homolateral side. (3) After cranial injuries, such as basal fractures, choked disc in the so-called stage of "optic neuritis" is of frequent occurrence, due in all probability to the cerebral oedema which follows the concussion or contusion.

Dyschromatopsia and interlacing of the colour fields are signs the significance of which has been recently indicated by the author and Dr James Bordley (*Review*, Vol. viii., 1909, p. 42). The dyschromatopsia bears no apparent relation to the degree of choked disc, and in a number of instances the inversion of the colour fields has been demonstrated before the ophthalmoscopic changes were visible. The alteration in the colour fields is, it would seem, a more delicate gauge of tension than is choked disc. The authors have observed in a number of cases with an intact form field a hemiachromatopsia (which foretold a subsequent total hemianopsia), but even in these cases more or less complete inversion has been present in the half fields of retained colour vision.

Referring to diagnosis, Cushing remarks that pseudo-tumours in many cases are doubtless due to cerebro-spinal fluid disturbances—an oedema or serous meningitis—the presence of which may easily elude post-mortem notice, though often clearly apparent when the cranial chamber is opened during life.

From the pathological standpoint it is interesting to note that of the 72 intracranial tumours which were examined by Dr F. B. Mallory and Dr Charles J. Lambert, 47 were gliomata, while only 1 was classed as a sarcoma, many of the tumours which in the past would certainly have been regarded as sarcomatous proving to be gliomata. A differentiation between glioma and sarcoma can at times only be assured, as Dr Mallory has demonstrated, by special staining of absolutely fresh tissue and by the examination of the entire growth, for the histological diagnosis hinges either on the demonstration of fibrils or upon an elaborate study of the topographical arrangement of the cells disclosed by large sections.

Cushing has personally observed 130 cases of tumour, or presumed tumour, during the past six years, 109 of which were operated upon; 64 cases have been seen and operated upon by

himself or Dr Heuer during the past ten months. There have been 84 operations on these 64 cases. The lesion was disclosed, and an attempt made to remove a solid tumour, or to permanently drain a cyst, in 23 cases (34·3 per cent.). Three patients with large tumours died almost immediately, while 3 died subsequently (cerebral thrombosis, continuance of a partially removed growth, and a distant cerebral metastasis). Sixteen patients (25 per cent.) remain who have recovered with more or less complete restoration of function, which will probably be permanent in most of them. In 41 of the 64 cases (63·4 per cent.) the operation amounted either to a simple premeditated decompression for unlocalisable or inaccessible tumours, or to an exploratory craniotomy with a decompression if no tumour was disclosed, or if the tumour was too extensive for removal. Death immediately followed the operation in 5 of these. In several of the 8 operative fatalities referred to, death was the immediate consequence of a lumbar puncture with continuous withdrawal of fluid during the operation in order to lessen the extreme tension which was present, and thus permit of a more thorough exploration. Fifteen lived for variable periods, some with considerable improvement; 21 are still living with symptoms in complete abeyance, or so far alleviated that most of them have been able to return to their occupations. A number of the author's decompression cases remain alive and well at the time of writing, some of them six or eight years after the operation.

Subtemporal decompression is next considered. The method is not adapted to subtentorial lesions, or to cases complicated by an internal hydrocephalus.

The opening in the skull should be made over the tumour in all cases in which the growth can be localised with reasonable definiteness, and in which there is a prospect that it may be removable.

The combined exploration and decompression has proved of great value in a number of cases. Cushing advocates an osteoplastic flap. If the growth is irremovable, the defect for purposes of decompression can then be made at the seat of election, while the osteoplastic flap is still reflected.

Cerebellar operations are described. Symmetrical exposure of both cerebellar hemispheres is preferred. Great stress is laid upon opening the dura near the foramen magnum, so as to ensure at the earliest opportunity an escape of fluid and thus prevent rupture of the cortex.

Among 35 cerebellar operations, there were 4 operative fatalities (post-operative pneumonia, hæmorrhage during manipulation, status lymphaticus), 13 successful extirpations or cyst evacuations (37·1 per cent.), 14 operations abandoned as decom-

pressions (40 per cent.), with complete abeyance of symptoms in many instances, and 2 cases (5·7 per cent.) in which practically no betterment occurred.

Regarding the technique of operations for intracranial new growth, Cushing remarks that it is far easier to do harm than good by the rough and rapid operative measures so commonly employed, and that difficult though the craniotomy itself may be, it is the least important element of the operation.

EDWIN BRAMWELL.

ENDOTHELIOMA OF THE DURA. (Ueber das Endotheliom der (331) Dura.) RIBBERT, *Virchow's Archiv*, Bd. 200, H. 1, 1910, S. 141.

IN previous publications the author has stated it as his opinion that the only example of a tumour which with certainty can be regarded as an endothelioma is the tumour of the dura variously referred to as psammoma, sarcoma, fibroma; a tumour which is specially found on the inner surface of the cerebral dura mater, but which may also arise from the pia and in the substance of the brain itself, and which is believed to take origin from the cells covering these structures.

Recently Johannes Fick has thrown doubt upon this explanation of the origin of the tumour. He regards the tumour as arising from epithelium, and therefore as being an epithelioma. Ribbert, criticising Fick's view, admits that in certain examples of the tumour there is some evidence in support of this view, but he holds that these form the minority of cases. The vast majority have an unmistakable sarcomatous or fibro-sarcomatous structure.

Dealing with the arguments in favour of the endothelial origin of the tumour, Ribbert states that structures with similar appearances to the characteristic concentric masses of spindle-shaped cells may be found in pachymeningitis. The endothelium of the dura is embryologically of connective tissue origin. The tumour does not arise from intradural cells, but from the free surface.

JAMES MILLER.

TUMOURS OF THE PINEAL BODY. C. M. HINDS HOWELL, *Roy. Soc. of Medicine*, March 1910.

THE paper was based on three instances of pineal tumours, which histologically were practically identical. They were composed of masses of cells, with an ill-defined alveolar arrangement. The nuclei were large and stained well, the cell protoplasm was very ill-defined. Along the strands of fibrous tissue found in parts of the tumours were to be seen rows of small round cells. The

tumours did not infiltrate surrounding parts to any extent, but had caused a pressure atrophy. After projecting forwards into the third ventricle the growth had been forced down the Sylvian aqueduct, which had been considerably distended in consequence. There were no metastases. In many respects the tumour cells resembled those of the normal pineal body.

The characteristic symptoms of these tumours may be grouped in order of their localising value into dilatation of the pupils, ocular palsies, vertigo, staggering gait, tremors, and deafness.

Reference was made to the unusual symptoms on which Marburg and others have laid stress. Briefly these consist in undue precocity in mental and physical development in young children. The possible relation of these symptoms to morbid conditions of the pineal body was considered.

AUTHOR'S ABSTRACT.

**CEREBRAL MONOPLÉGIA, WITH SPECIAL REFERENCE TO
(333) SENSATION AND TO SPASTIC PHENOMENA. G. BERGMARK, *Brain*, March 1910, p. 342.**

IN this fine study the author has investigated eighteen cases of cortical cerebral lesions, six of which were also examined post-mortem. He first describes his methods of examination, then gives details of his cases. For comparison a number of capsular lesions have also been studied, but they are not referred to in such detail. He then discusses from his own cases and from a review of the literature, to which a very large number of references are given—(1) the sensory impairment due to cortical lesions, (2) the cortical localization of sensation, and (3) the spastic phenomena in cortical lesions. The conclusions arrived at are as follows:—(1) Motion and sensation are not localized in the same cortical centres. (2) The cortical centre for motion is situated entirely in front of the sulcus centralis and is limited to the anterior central gyrus. (3) Sensation is localized entirely behind the sulcus centralis and is situated in the gyrus centralis posterior, and a part at least of the parietal lobe. (4) The sensory projection-area is subdivided into centres for the various parts of the body, as we know to be the case within the motor area. But it is an open question whether there are separate centres for the various sensory qualities, such as the cutaneous and muscular senses. (5) Cortical lesions do not produce definite increase of the reflexes or the typical late contracture found in hemiplegia of capsular origin. On the other hand, early contracture is a common result of cortical lesions, and is due to cortical irritation.

J. H. HARVEY PIRIE.

PROGRESSIVE CEREBRAL DIPLEGIA AND ALLIED DISEASES.

- (334) (Über progressive cerebrale Diplegie und verwandte Formen, speziell über die juvenile und infantile Varietät der Tay-Sachsschen Krankheit oder der familiären amaurotischen Idiotie.) HIGIER, *D. Ztschr. f. Nervenheilk.*, Bd. 38, 1910, S. 388.

UNDER the term "progressive cerebral diplegia," Higier includes those hereditary or familial infantile cerebral palsies, usually of chronic course, with their numerous varieties, including not only spastic paraplegias and pseudo-bulbar palsies, but also cases with irritative motor phenomena, and those with psychical defects, such, for example, as general athetosis, hereditary chorea, and degenerative epileptic feeble-mindedness.

Higier describes a case of diplegia belonging to the amaurotic family idiocy type of Tay and Sachs. He recalls the main features of this malady, its occurrence in Jewish children, its onset in the first year (after a latent period of several months), with apathy, mental deterioration, and gradual weakness of the limbs, progressing to idiocy, optic atrophy, yellow patches of retinal degeneration, and blindness. The essential pathological changes consist in cystic degeneration and swelling of nerve-cells from cortex down to conus, together with the presence of numerous granular, nucleated glia cells. He distinguishes this type of disease from other familial cerebral diplegias by the following points:—1. The juvenile form of diplegia occurs in several generations of a family, unlike the early infantile type. 2. The early infantile type has a characteristic racial predilection for Jewish, and especially Polish-Jewish, children; this is not the case in the juvenile varieties. 3. The juvenile form is much rarer than the infantile. 4. The characteristic cherry-red colouration of the macula lutea (in addition to optic atrophy) occurs invariably in Tay-Sachs disease, but not in the juvenile familial diplegias. 5. The two varieties never occur in members of the same family. 6. The infantile form has a stereotyped symptomatology, whereas the juvenile forms have widely varying signs and symptoms. 7. Juvenile diplegia occurs chiefly in the male children of mothers who do not themselves suffer from the disease, whereas the Tay-Sachs disease occurs exclusively in female children of the same generation. 8. The juvenile variety runs a much more chronic course than the infantile. 9. Histopathological examination also shows differences between the two types, the cortical cells in the juvenile forms being normal, granular detritus being absent, the optic nerves and nerve-fibre layer of the retina escaping, and the degeneration remaining essentially endo-cellular, not endo- and exo-cellular together.

He then proceeds to discuss the type of juvenile diplegia described by Pelizaeus and investigated pathologically by Merzbacher—cases where the disease came on in the third year of life, and proved fatal in adult life, unlike the Tay-Sachs disease, which is fatal by the end of the second year. The Pelizaeus type of disease is the result of a congenital malformation, or agenesis of axis cylinders, especially of the long extra-cortical association tracts (unlike the primary cellular degeneration of the Tay-Sachs disease). He therefore contends that the two types of disease are essentially different, though both of them possess certain features in common, such as their endogenous origin, their progressive course, their familial character, their onset in early life, and the absence of inflammatory or vascular changes in the central nervous system.

PURVES STEWART.

A NEW SIGN IN ORGANIC HEMIPLEGIA. NERI, *Nouv. Icon. de la* (335) *Salpêtrière*, Jan.-Feb. 1910, p. 88.

THE patient stands with his feet a little apart, his arms folded on his chest, and he is asked to bend his body down, keeping his knees straight. As he does so, at a certain point (usually when the trunk is more or less horizontal) the paralysed leg flexes at the knee, while the sound limb still remains straight.

S. A. K. WILSON.

EPILEPSY. WILLIAM ALDREN TURNER, *Brit. Med. Journ.*, March 26, (336) April 2, and April 9, 1910.

THREE aspects of epilepsy were considered by the lecturer:—

- (a) The Problem of Epilepsy.
- (b) The Borderline of Epilepsy.
- (c) The Treatment of Epilepsy.

Epilepsy was regarded as a symptom of a number of morbid conditions, the chief varieties of which were: (1) Organic epilepsy, arising from tumour of the brain, thrombosis, or injury; (2) early epilepsy, or that arising in infancy and early childhood; (3) late epilepsy, due to arterio-sclerosis, intoxication, some dementias, and puerperal eclampsia; and (4) idiopathic epilepsy, for which no obvious cause could usually be found.

The only feature necessary to establish the diagnosis of epilepsy is sudden brief loss or impairment of consciousness. This definition included all the manifold varieties of the disease, such as major and minor fits, aura sensations, jumps (*petit mal moteur*), post-convulsive automatism, psychical epilepsy, and the psychical epileptic equivalents.

Idiopathic epilepsy is essentially a disease of youth, most cases beginning during puberty. After thirty the disease is less common.

The disease was considered both from the convulsive and the psychical aspects. As regards the convulsive element, the author adhered to the view originally propounded by Herpin, that the aura sensations and the incomplete attacks, which form the common symptoms of minor epilepsy, are the initial phenomena of the major seizures. The latter element was considered under the heads of temperament, paroxysmal mental symptoms, which either precede or succeed the fit, psychical equivalents, and the permanent dementia.

As regards the pathological anatomy of epilepsy, it was shown that in the early stages and in mild cases the disease might occur without any gross changes in the brain. In old standing cases, on the other hand, changes were found in the blood vessels, the cortical cells and the neuroglial tissues, especially of the superficial cortical layers, the last being most marked in cases presenting mental deterioration.

In discussing the predisposing causes of epilepsy, the author gave the most prominent place to ancestral epilepsy, and showed the discrepancies which exist in statistics taken from French, German, and American sources. Attention was directed to stigmata of degeneration as important evidence of the inherited tendency. Importance was also laid upon the existence of such neuroses as migraine, neurasthenia, obsessions and tics in the parents.

Among the exciting causes attention was especially called to pregnancy, the puerperium, sleep, emotional influences, and reflex causes.

Considerable attention was then paid to the immediate causes of individual seizures, evidence being brought forward both for and against vaso-constriction of the cerebral arteries as the immediate cause of epileptic attacks. Dr A. E. Russell's view that the seizures were due to cardiac inhibition was also discussed.

The seat of the epileptic discharge for seizures commencing without a warning was placed in the frontal lobe, while the seat of origin of those fits with a definite warning was placed in the corresponding special sense area. If the warning was of a complex psycho-sensory character the discharge probably arose in the psychical or higher portion of the special sense centres described by A. W. Campbell.

The author then proceeded to discuss toxæmic epilepsy, and briefly referred to the experimental evidence upon this subject and to the recent researches of Dr John Turner upon blood coagulation in epilepsy. His conclusions were that the only

forms of epilepsy of toxæmic origin were serial epilepsy, status epilepticus, and those attacks associated with acute mental symptoms.

The second lecture dealt briefly with the symptoms upon the border-line of epilepsy. The differential points between the hysterical and the epileptic attacks were pointed out, and special stress was laid upon the value of hypnosis in diagnosis. Reference was also made to periodic seizures which were neither hysterical nor epileptic, but which seemed to merge either into the one or other of these diseases, attacks such as have been described by different authors—the “para-epilepsy” of Dana; the “vaso-vagal attacks” of Gowers; the “psycholepsy” of Janet, and the “psychasthenic attacks” of Oppenheim. The author proposed to designate all these attacks as “epileptoid,” and to divide them into two sub-groups, according to the predominating symptoms, either vaso-motor (vaso-epileptoid) or psychical (psycho-epileptoid). The outstanding symptoms of both these varieties were defined and their relation to epilepsy was pointed out. Brief consideration was also given to some sleep symptoms, such as nocturnal screaming and sleep-walking.

In the third lecture the treatment of epilepsy was fully considered. At the commencement the general and hygienic treatment was discussed, with special reference to the influence of massage and hydropathy. The advisability of an outdoor or indoor life was also discussed, as well as the influence of education and marriage upon the disease. Attention was also called to the necessity of an examination of all the peripheral organs, such as the nose, eyes, ears, stomach and intestine, heart and lungs, and the generative organs.

A detailed account was given of the action of the bromides upon epilepsy. The author believes that the bad effects of the bromides are due more to the manner in which the drug is given than to the drug itself. He also referred to the large number of cases of epilepsy (nearly 50 per cent. in his experience) in which the bromides are of no avail. The common dose should be from 30 to 60 or 70 grains of bromide salt in the twenty-four hours.

Reference was also made to the value of eliminating chloride of sodium from the diet, as this method favoured a more complete saturation of the tissues with bromide and therefore tended to lessen the size of the dose of these drugs.

He also referred to the necessity of continuing the bromides for some years after the arrest of the fits.

The author especially favoured Gelineau's formula in cases in which the bromides were not well taken. This is a combination of bromide of potassium, picro-toxin, and the arseniate of antimony.

The influence of borax, digitalis, belladonna, and zinc was also

discussed. The use of the organic extracts and serotherapy was mentioned.

The lecturer concluded with reference to the great value of a purin-free diet in all cases of recent epilepsy.

In the treatment of confirmed epilepsy the regular life of an institution for epileptics was regarded as being most satisfactory.

AUTHOR'S ABSTRACT.

**EPILEPSY AND INFECTION. A CASE OF EPILEPSY FOLLOW-
(337) ING TYPHOID FEVER.** (*Epilepsie et infection. Un cas
d'epilepsie consécutif à la fièvre typhoïde.*) G. PETGES, *Gaz.
hebd. de Bordeaux*, 1910, p. 147.

A MAN, aged 24, free from personal or inherited taint, in convalescence from moderately severe typhoid fever, developed convulsive attacks preceded by an aura and characteristic cry, and followed by amnesia. During the next nine years the attacks continued at longer or shorter intervals, sometimes several times a week, sometimes daily, being aggravated by digestive disturbance and diminished by milk diet, intestinal antiseptics and bromides, and finally entailing a mental deterioration which reduced him to the ranks of the unemployed.

J. D. ROLLESTON.

EXOPHTHALMIC GOITRE AND PREGNANCY. (*Maladie de
(338) Basedow et grossesse.*) BONNAIRE, *Presse méd.*, avril 6, 1910, p. 249.

THE increase of general metabolism associated with pregnancy calls for greater activity on the part of the thyroid gland. The connection between thyroid deficiency and albuminuria during pregnancy has been demonstrated by the experiments of Lange in cats, and the clinical observations of Nicholson in eclampsia. The presence of a goitre as such has no bad effect, the vital point being the functional capacity of the gland. Totally divergent views as to the inter-relationship of exophthalmic goitre and pregnancy have been expressed by various authorities, some holding that the pregnancy was unaffected and the disease improved; others that the condition itself was aggravated, and was a source of danger to both mother and foetus; and yet others that no special influence was to be noted one way or the other. Out of 30,000 maternity cases the author has only had two of Basedow's disease, but he believes that many of the common disorders of pregnancy may be due to the presence of this disease in an incipient and undeclared form. The chief complications to be feared are cardio-vascular

failure, hæmorrhage before, during, and after delivery, nervous crises, and tetany. The first three of these were illustrated in the author's two cases, both of whom, however, went to full time. When interference is necessary it should be of an obstetrical nature, and directed towards the termination of the pregnancy, any surgical operation on the gland itself being contra-indicated. Occasionally amelioration of the disease follows the completion of pregnancy. Patients suffering from slight exophthalmic goitre may be allowed to marry, but a guarded prognosis should be given as regards pregnancy. Should pregnancy occur, and dangerous complications arise, the gestation must be brought to a stop, and any further pregnancy prohibited.

HENRY J. DUNBAR.

THE TREATMENT OF GRAVES'S DISEASE WITH THE MILK
(339) **OF THYROIDLESS GOATS.** WALTER EDMUNDS, *Lancet*,
April 23, 1910, p. 1135.

THIS article contains additional reports on previously published cases, and adds some new ones. Of a total of nineteen cases treated by this method, a few have been lost sight of, but of those still under observation the majority show some improvement, and several have been markedly benefited.

HENRY J. DUNBAR.

LOCALISED VERTEBRAL TENDERNESS IN CARDIAC
(340) **NEUROSES.** (Ueber lokalisierte Rückenwirbelempfindlichkeit bei Herzneurosen.) FRIEDMAN, *Neurol. Centralbl.*,
April 16, 1910, p. 412.

THE author has frequently observed tenderness on pressure over the third, sometimes also over the second and fourth, dorsal vertebral spines in cases of cardiac disease. This symptom was present in about half the cases of cardiac neuroses, but only very rarely in the cases of organic heart disease which he examined. The purpose of the paper is to draw attention to the sign, the value of which in diagnosis can only be determined by further observations.

EDWIN BRAMWELL.

TREMOR. (Ueber das Zittern.) KOLLARITS, *D. Zeitsch. f. Nervenheilk.*,
(341) Bd. 38, 1910, S. 168.

THE rapidity of various tremors has a certain diagnostic value. For example, in exophthalmic goitre the tremor has an average

rate of 8-9 per second; in mercurial poisoning it is slower, about 5-6 per second. For the exact record of a tremor it is important to study each joint separately, fixing the proximal part of the limb so as to avoid combined movements of various segments of the limb. Kollarits makes his patient touch one end of a light wooden recording lever of a Marey's drum. The receiving drum is connected by a rubber tube with another recording drum, whose lever traces the result on a revolving cylinder. In healthy people, by this means, a slight tremor, of which the subject is unconscious, is recorded, but in its range it is not comparable to the pathological varieties of tremor. The index finger, hand, forearm, upper arm, thigh, leg, and foot are all investigated separately. Various forms of tremor are described in detail. The author's conclusions are as follows:—

The tremor or rate of vibration of heavy portions of a limb is slower than that of lighter segments. Each segment of a limb has its own rate of vibration, varying within certain limits. Longer curves are generally higher than short curves. Even in pathological conditions the rapidity of vibration is greatest at the distal parts of the limb. Pathological tremor as a rule is much slower and its excursions higher than the healthy vibration. The hypertonic curve of intention-tremor is recorded, that of other varieties of pathological tremor with normal tremor being usually (but not invariably) more pointed. Hysterical tremor is generally irregular. In paralysis agitans, in addition to the rhythmic tremor, we trace muscular twitches superadded, so that individual muscular groups stand out, but without causing the limb to make any extra movement. The number of vibrations on attempted voluntary rhythmic movement is less than in involuntary tremor; but it can be done better in the right limb than in the left; also the rate of voluntary tremor varies according to the movement performed; thus flexion-extension and pronation-supination are performed faster than lateral movements of the wrist. If a tremulous limb be loaded so as to make the main tremor impossible, it often becomes transferred to a different variety, *e.g.* from flexion-extension to pronation-supination. The outstretched hand trembles in almost every healthy person, and a slow voluntary movement cannot be executed without a certain degree of tremor. Pathological tremor or movement is an exaggeration of the normal tremor due to faulty co-ordination. The hypertonic form of this is the so-called intention-tremor, and occurs not only in disseminated sclerosis but also in hemiplegia and other hypertonic conditions.

PURVES STEWART.

A CASE OF ACHONDROPLASIA. ZOSIN, *Nouv. Icon. de la Salpêtrière*, (342) Jan.-Feb. 1910, p. 31.

THE author is struck by the marvellous resemblance which achondroplasias of all times and of all races bear to each other, and considers whether they may not be considered as a vestige of a formerly existing race. He seeks support for this opinion in a consideration of Weissman's theory of the continuity of germ-plasm.
S. A. K. WILSON.

PSYCHIATRY.

LES INTERPRÉTATEURS FILIAUX. SÉRIEUX and CAPGRAS, (343) *L'Encéphale*, Feb. 10, 1910, and April 10, 1910, p. 403.

THE type of insane patient who imagines himself a member of a titled or royal family has long been known. Historian and novelist alike have occupied themselves with the tales of these wronged individuals, who consider they have been "substituted" for someone else at an early age, and have never ceased to bewail their lot. Various "princes" and "princesses" occur to the mind in this connection. The authors report the case of an intelligent and educated man who believed himself a member of the families of Romanoff and Hohenzollern, because he fancied he saw in himself certain traits of resemblance to them. He became convinced that during some childish illness they had got rid of him, and from the age of forty he had never ceased writing to the heads of the families. Various other cases are quoted, and an interesting analysis of the condition is given.
S. A. K. WILSON.

THE ORIGIN OF TACTILE ILLUSIONS ("VEXIRFEHLER")
(344) **MET WITH IN ÆSTHESIOMETRY.** (Sur l'origine des illusions tactiles ("vexirfehler") rencontrées en esthésiométrie.) AMELINE, *L'Encéphale*, Feb. 10, 1910, p. 140.

THE tactile illusion, which consists in feeling apparently two points when only one is applied to the skin is, according to the reporter, inseparable from that other which consists in feeling only one point when the two compass or æsthesiometer points, applied simultaneously, are sufficiently close together.

As mistakes of this kind are more common among the intelligent than among the unintelligent, it may be said that the defence reaction ("two points") is more developed in the former. A psychological explanation of the phenomenon (the above being,

so to speak, a "biological" explanation) is given by Binet, who supposes that certain types of individual, unaccustomed to analyse impressions, habitually answer "one point" when they feel only one point; others, more introspective and "interpretative," frequently reply "two points."

Physiological explanations are that repeated stimulation of a particular area of skin results in confusion; also there is a tendency to refer differing sensations to different spots.

The author thinks that a possible physical explanation is that depression or deformation of the skin, accompanying the application of the æsthesiometer, prevents the subject from deciding definitely between "one" or "two" points, as the sensation arising from the former may be continuous with the latter.

These various explanations are not mutually exclusive.

S. A. K. WILSON.

TREATMENT.

EXPERIMENTS ON THE ARREST OF HÆMORRHAGE IN BRAIN

(345) **OPERATIONS AND ON PLASTIC OPERATIONS ON THE DURA.** (Versuche über Blutstillung bei Gehirn-operationen und Duraplastik.) ERST UNGER u. MAX BETTMANN, *Berl. klin. Wchnschr.*, April 18, 1910.

CONSIDERABLE difficulty is often experienced in cerebral operations in arresting hæmorrhage when one of the large venous sinuses has been wounded. Closure of the wound in such a vessel by sutures is the ideal treatment, but this is usually rendered impossible from the difficulty in controlling the hæmorrhage during the attempt to insert the sutures. The writer, experimenting on dogs, produced wounds of the longitudinal sinus, and then attempted to control the hæmorrhage by playing a stream of oxygen on the bleeding wounds. The animals all died, however, from oxygen embolus. They attained considerable success, however, by employing an apparatus on the principle of the vacuum cleaner, which sucked away the blood as rapidly as it flowed from the wound, giving the operators a clear view of the rent in the vessel, and thus the chance of accurate suturing. They succeeded in closing the wounded vessel best, not by direct suture of the edges of the wound (this was not satisfactory), but by stitching over the wound a portion of some large blood vessel from another animal, which had been kept on ice, as recommended by Carrel. Within two or three minutes this transplanted portion of vessel adhered firmly and arrested the bleeding completely.

For closing large defects in the dura mater the writers have likewise employed portions of large blood vessels which have been

preserved on ice, and with uniform success. The wounds healed readily, and no adhesions formed between the transplanted vessel-wall and the subjacent arachnoid. Equal success was obtained whether they employed the wall of an artery or that of a vein.

D. P. D. WILKIE.

DIAGNOSIS AND TREATMENT OF BRAIN INJURIES. (*Diagnose* (346) *und Behandlung der Hirnverletzungen.*) TILMANN, *Deut. med. Wochenschr.*, March 31, 1910.

THIS paper contains a fairly complete review of the whole subject, and it especially emphasises the tendency of modern surgery to more and more conservative lines of treatment in the majority of brain injuries. In most cases of bullet wounds and injuries caused by sharp-pointed instruments operative treatment is not indicated. The skull should never be opened in order to remove a bullet which is not causing any distressing symptoms, and only when there has been considerable splintering of the cranial bones should a primary operation be undertaken.

In cases where a diagnosis of cerebral laceration has been made, expectant treatment should in the first instance be adopted. Epileptiform attacks coming on in the first twenty-four hours in such cases do not constitute an indication for operative interference. Only when such attacks persist for longer, and when they definitely suggest some local irritation, should the skull be trephined. In cases of subdural hæmorrhage, conservative treatment should be adopted, unless in the presence of symptoms of cerebral compression. In this class of case a large opening in the skull must be made, as the blood clot is very difficult to dislodge.

Operative measures should be confined to cases of—

1. Open lacerated wounds of the brain.
2. Progressive cerebral compression from hæmorrhage, abscess, or encephalitis.
3. Persistent cerebral irritation, as evidenced by continued epileptiform seizures.

D. P. D. WILKIE.

Reviews

INSANITY. E. G. YOUNGER. London: Bailliere, Tindall & Cox, 1910, pp. 124. (Second Edition.) Price 3s. 6d. net.

THE object of this book is to enable medical men to grasp the main outlines of diagnosis and prognosis in the ordinary forms of

mental disease. The author does not intend that it should be classed along with larger treatises. It is written for the use of busy general practitioners, who should find it of great value to them. The chapter on the examination of the patient with a view to certification is instructive, as is also that dealing with the legal aspect. The second part of the book, which treats of the various forms of insanity, might be extended with advantage.

R. DODS BROWN.

SYPHILIS UND NERVENSYSTEM. (Neunzehn Vorlesungen für praktische Aerzte, Neurologen und Syphilidologen.) Zweite vermehrte und erweiterte Auflage. MAX NONNE. Berlin: S. Karger, 1909.

SINCE the first edition of this work appeared, six years ago, remarkable developments have taken place in our knowledge of the relationship of syphilis to nervous diseases, principally by the discovery of the *spirochæta pallida* by Schaudinn, by the elaboration of the methods of examining the cerebro-spinal fluid and by Wassermann's test, and much progress has also been made in our clinical knowledge, especially with regard to general paralysis. This has necessitated an enormous amount of work on the part of the author and his assistants. References to all the most important investigations made within these last six years into the relationship of syphilis to the nervous system have been incorporated into this edition, and as a result the volume must now be looked upon as the standard work on the subject. It has been cast into the form of lectures, and it is written in a simple, clear style, easy to follow.

It will perhaps be most to the purpose if we indicate the contents of the volume. An introductory chapter discusses the nature of the syphilitic process, the causal organism, the mode of infection, the general character of the post-mortem appearances, and the symptoms which arise when there is a complication with other diseases, such as alcoholism, tuberculosis, or with accidents, such as injury to the head. The second chapter deals with the pathological anatomy of syphilis of the nervous system, and those which follow discuss the arterial form of cerebral syphilis, meningitis of the convexity and of the base of the brain, paralysis of the eye muscles, the psychoses and neuroses in syphilitic patients, and in cerebral syphilis, dementia paralytica and the various forms of syphilis of the spinal cord and its membranes. Tabes and the diseases which simulate it are fully considered in a chapter by themselves. Then follow chapters upon cerebro-spinal forms of syphilis, diseases of the peripheral nerves, hereditary syphilis of

the nervous system, treatment and diagnosis by the investigation of the cerebro-spinal fluid and by Wassermann's method of the deviation of complement. To each of these subjects detailed consideration has been given.

There are 97 illustrations in the text, a full bibliography, and a good index.

MALADIES DE LA MOELLE ÉPINIÈRE. J. DEJERINE et ANDRÉ-THOMAS ("Nouveau Traité de Médecine et de Thérapeutique." Gilbert et Thoinot. Vol. xxiv.). Paris: Baillière et fils, 1909. 16 frs.

THIS remarkable work is virtually a second edition of the treatise by the same authors which appeared in 1902 in the "Traité de Médecine," published under the direction of Brouardel and Gilbert. Like its predecessor, it is no mere compilation, but on every page it bears evidence of the individual work of its distinguished authors. It has been much enlarged, and to a great extent re-written, and most carefully illustrated, the clinical features by photographs, and most of the pathological changes by reproductions of drawings by the artist who assisted Professor Dejerine in his great work on the anatomy of the brain. The authors have laid much stress upon the superiority of careful drawings by an expert hand over mere photographic reproductions, and the present work shows in a most convincing way how fully they are justified in their opinion.

The earlier chapters of the work are devoted to the study of the normal and pathological anatomy of the cord, and the latter has been exceedingly fully illustrated, more especially with regard to the effects of secondary degeneration, which has been discussed with great thoroughness. The question of the individual pathological processes is considered in connection with each disease, and the careful account of their morbid anatomy is one of the distinguishing features of the work.

The symptomatology of spinal diseases has been analysed in the same complete manner as the pathology, a special chapter being devoted to it. Another chapter has been given to the general physiology of the cord. The discussion of the diseases of the cord is introduced by a study of the injuries to the vertebral column and of direct and secondary traumata of the cord, as well as of the changes in the cord which occur in the course of Pott's disease. To this subject, which usually gets but scanty treatment in text-books, some eighty pages have been devoted, constituting a most valuable chapter for the surgeon as well as the physician. Then follows a consideration of the primary lesions of the cord, the non-systematised lesions of softening, hæmatomyelia, acute

myelitis, acquired and hereditary syphilis, the various forms of poliomyelitis, disseminated sclerosis, syringomyelia, etc.

As is perhaps natural, much attention has been given to the question of the pathology of tabes, in which the changes in the posterior roots, root ganglia and peripheral nerves have been described and figured with great fulness. We do not know any account that is so exhaustive. It is instructive to note that the authors feel bound to express themselves with great reserve as regards the pathogeny of this disease.

One cannot but feel impressed on reading this work by its completeness, both from the clinical and pathological standpoints. We know no text-book which equals, or even nearly approaches it in the latter respect, and it deserves to find a place in the library of every neurologist.

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Review of Neurology and Psychiatry

Original Articles

CONJUGATE DEVIATION OF THE HEAD AND EYES IN PARALYSING OR IRRITATIVE LESIONS OF THE CEREBELLUM.

By WILLIAM G. SPILLER, M.D.,

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University of Pennsylvania ; Corresponding Member of the Verein für
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Read before the Philadelphia Neurological Society, March 25, 1910.

CONJUGATE deviation of the head and eyes resulting from a lesion of the cerebrum is believed to be away from the lesion in irritation and towards the lesion in paralysis, and the phrase, "The patient looks at the lesion," is generally accepted as correct for the deviation occurring in cerebral hemiplegia. The portion of the cerebrum directly concerned with conjugate deviation is not so well recognised, and this subject has received attention from Weisenburg. As regards pontile lesions the conjugate deviation is supposed to be inverse to that produced by cerebral lesions. As stated by Landouzy, a patient who turns his eyes towards the paralysed limbs on one side has a pontile lesion of a paralytic character ; whereas a patient who turns his eyes away from his limbs of one side in convulsions has a pontile lesion of an irritative character. The evidence for the correctness of these

statements is not so conclusive as that for the direction of the conjugate deviation in cerebral lesions, as conjugate deviation from a lesion in the pons is far more uncommon than from a lesion in the cerebrum.

The direction in which the head and eyes are turned from a lesion in the cerebellum is not determined satisfactorily, as conjugate deviation is usually the sign of a rapidly forming lesion, and is not likely to be persistent. Hæmorrhage or thrombosis of the cerebellum is rare. Starr says that in 187 consecutive cases of apoplexy examined post-mortem at the Presbyterian Hospital, hæmorrhage in or softening of the cerebellum was found in four cases only. He gives references to twenty-seven cases in the literature in which cerebellar hæmorrhage has been found after death.

When hæmorrhage occurs it almost always affects a considerable extent of the cerebellum, and even though it begins in a lateral lobe it is likely to extend into the vermis or fourth ventricle. It is difficult in cases of this extent to determine whether a hæmorrhage acts as an irritative or paralysing lesion. It is probable that a hæmorrhage near the surface of one lateral lobe, sparing the intrinsic cerebellar nuclei and therefore acting as an irritant, would produce a form of conjugate deviation inverse to that occasioned by a hæmorrhage destroying the intrinsic cerebellar nuclei and acting as a paralysing lesion.

Recent investigations concerning electrical irritation of the cerebellum are somewhat at variance. Von Bechterew states that irritation of one-half of the vermis in the dog causes a turning of the head, trunk and eyes towards the side irritated. It would appear from this that cortical irritation of the cerebellum is possible, but it is more probable that the irritation is accomplished through the intrinsic cerebellar nuclei. Horsley and Clarke have found that excitation of the surface of the cerebellum is without effect, but that when the insulated needles penetrate the cerebellar cortex a minimal stimulus gradually becomes maximal as the needle points are made to approach the intrinsic nuclei, which are highly excitable. The essential motor representations of the parts of the body in the intrinsic and paracerebellar nuclei are, in the former, the movements of the eyes and head; in the latter, more especially those of the trunk

and limbs. The intrinsic nuclei are the nucleus dentatus, nucleus fastigii, and nucleus emboliformis vel globosus. The movement of the eyeballs from stimulation of the cerebellum is a steady swing over, which increases in contractile force as the excitation continues, and is without any clonic intermission of the motion or any development of any after-effect when the stimulation ceases. Direct excitation of the upper part of the nucleus dentatus alone evokes deviation of the eye of the same side, followed by conjugate deviation of both the eyes and head from the middle line to the same side.

Horsley and Clarke found that while excitation of the basal region of the nucleus dentatus with a maximal stimulus will produce, in addition to the homolateral conjugate deviation of the eyes and head, flexion of the homolateral elbow, a deeper excitation, *i.e.* of the paracerebellar nuclear region itself, produces widespread and additional effects, namely, extension of the contralateral elbow, hyperextension of the neck and trunk, with powerful extension of the lower limbs.

J. S. Risien Russell, in speaking of the ocular phenomena of cerebellar lesions, draws his conclusions chiefly from cases of tumour. He says: "As in cases of experimental ablation, defective power of movement of the eyes to the homolateral side, with insome cases even a slight tendency to deviation of the globes to the contralateral side in the resting condition, may be observed. It is, however, especially a difficulty in sustaining the movements of the globes to the homolateral side that is most evident. In this defect it commonly happens that the external rectus of the homolateral side shows a greater degree of disability than does the internal rectus of the contralateral eye. This is explained by the fact that whether or no defect of the conjugate movements is determined, the external rectus of the homolateral, and even that of the contralateral side to a less degree, gives evidence of weakness due to pressure effects on the sixth nerve. The external rectus paralysis is rarely complete, however, except when the tumour is so situated as to be able to exert pressure directly on the sixth nerve."

Russell refers to a case in which the symptoms clearly indicated a lesion of the right lateral lobe of the cerebellum. An abcesss was evacuated from this lobe. The patient lay curled up on his left side, with all his limbs flexed. His eyes

were deviated to the left and presented lateral nystagmus. The right arm was markedly weak, while both lower limbs were slightly so. The right knee jerk was brisk and greater than the left.

It would seem to me that in this case a paralysing lesion was present, and therefore the deviation of the eyes was away from the lesion.

Russell finds that in the vast majority of cases vascular lesions in the cerebellum prove of pathological rather than of clinical interest, because death has resulted so rapidly or under such conditions as have not allowed of cerebellar symptoms being determined, or because the lesions have been of such a character that they could not be expected to cause a characteristic clinical picture. In hæmorrhage the patient usually dies rapidly owing to rupture of the blood into the fourth ventricle, or if living longer remains comatose, and does not permit of proper analysis of the symptoms in the way that might otherwise allow of information being obtained which might lead to a correct diagnosis.

Foci of softening in the cerebellum are usually so small as not to cause symptoms. This is to be accounted for by the free anastomosis of the cerebellar arteries, while the sources from which the cerebellum receives its blood supply make the occurrence of embolism altogether improbable.

Hæmorrhage is usually as much pontile as cerebellar. Russell refers to seven cases, but they throw little light on the direction of the conjugate deviation in paralysing as distinguished from irritative lesions of the cerebellum.

In the case reported by Laignel-Lavastine and Halbron the head and eyes, in an attack of apoplexy, were turned to the left. A hæmorrhage was found in the right cerebellar lobe; it implicated the nucleus dentatus and the vermis, and caused the formation of a clot on the right side of the floor of the fourth ventricle. Noteworthy in this case is the deviation of the head and eyes to the left from a lesion in the right lateral lobe of the cerebellum, and as the lesion was evidently a paralysing one, the case would support the view that in destructive cerebellar lesions the patient looks away from the lesion.

In Case VI., reported by Touche, conjugate deviation of the head and eyes existed toward the right. A large part of the

left cerebellar lobe, and the left half of the posterior part of the vermis, were softened, and the softening extended to the nucleus dentatus. In Touche's Case V. conjugate deviation of the head and eyes was towards the left. Recent softening of the left cerebellar lobe was found implicating chiefly the cortex. From these two cases Touche concludes that recent superficial softening is accompanied by deviation of the head and trunk toward the lesion, while deep softening causes deviation of the head and trunk toward the opposite side.

Von Bechterew reported a case of hæmorrhage the size of a pea in the right lobus tonsillaris, resulting from a rupture of a branch of the inferior cerebellar artery. No statement is made regarding conjugate deviation of the head and eyes, and consciousness apparently was not lost. The case would have been valuable as regards the direction of conjugate deviation from cerebellar lesions, as would many others, had any observations regarding this matter in the onset of the symptoms been recorded.

I have recently had an opportunity to study a case which has important bearing on the subject of cerebellar conjugate deviation, and affords evidence that an irritative lesion of the cerebellum in man as well as in the dog causes turning of the head and eyes toward the lesion. It was one of small hæmorrhage in the left lateral lobe, which did not implicate the intrinsic nuclei of the cerebellum. Another hæmorrhage destroyed the right basal ganglia of the cerebrum, and there can be little doubt that so extensive a lesion as this was of a paralysing character, so far as conjugate deviation was concerned. Inasmuch as the head and eyes were turned to the left, the side of the irritating hæmorrhage in the cerebellum, and were turned away from the paralysing hæmorrhage of the cerebrum, the case shows that the symptoms produced by irritation of the intrinsic cerebellar nuclei predominated as regards conjugate deviation over those caused by a destructive lesion of the cerebrum.

It may appear singular that two hæmorrhages should have developed about the same time in the cerebrum and cerebellum, and that one should have been upon the right side and the other upon the left. The occurrence of hæmorrhage elsewhere in the brain in association with cerebellar hæmorrhage, however, is not unknown. Witte states that in 111 cases of cerebral hæmorrhage

observed in the institute of Grafenberg during eight years the cerebellum was the seat of hæmorrhage in six, and in these six cases hæmorrhage elsewhere in the brain was present; in five of them the hæmorrhage was in the central ganglia and the cerebral hemispheres. I have observed two recent hæmorrhages, entirely distinct from one another, in the basal nuclei of the cerebral hemispheres.

Had both lesions in my case been on the same side it would have been difficult to determine by which one the conjugate deviation of the head and eyes was produced. The deviation probably would have been toward the hæmorrhages, and would have been the combined result of the paralyzing cerebral lesion and the irritative cerebellar lesion. It would be important to determine toward which side the conjugate deviation occurs when a destructive cerebral lesion is combined with a simultaneously developing destructive cerebellar lesion on the same side, *i.e.* one implicating the intrinsic cerebellar nuclei. Would it be toward the cerebral lesion, or away from the cerebellar lesion?

The case to which I have referred is as follows:—I was asked to see a patient in Dr Laplace's service at the Philadelphia General Hospital on Feb. 9, 1910. He was a coloured man apparently about 70 years old, and had been brought into the hospital unconscious on Feb. 9, about 2.30 A.M. He had fallen on the street and was unconscious when picked up. Convulsions were not observed. The eyes and head were turned markedly to the left. The pupils were contracted and did not react to light. The left side of the face and left upper and lower limbs were paralysed as in ordinary hemiplegia. The arteries were sclerotic. The man had no control over the bladder and bowels, and was still unconscious. Both lower limbs were somewhat rigid. The patellar tendon reflex was exaggerated on each side, but Babinski's upward movement of the big toe was present only on the left side. The tendon reflexes of the left upper limb were exaggerated. Eighteen hours after the patient's entrance to the hospital, the intern recorded that the eyes looked forward with slight deviation of the right eye. This note would seem to imply that the left eyeball returned to a normal condition sooner than the right. It is uncertain, however, whether this slight deviation of the right eye was outward or inward, or whether deviation returned. Death occurred at 8 A.M., Feb. 10, 1910.

PLATE 14.

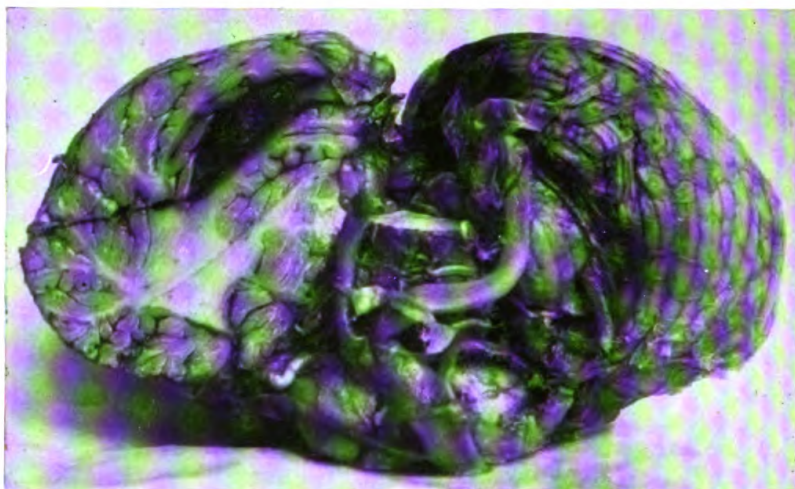


FIG. 1.



FIG. 2.

To illustrate Paper by Dr Spiller.

CONJUGATE DEVIATION IN THE CEREBELLUM 403

The deviation of the head and eyes toward the paralysed limbs without convulsions, away therefore from the cerebral lesion, was so unusual as to arouse my interest. A necropsy fortunately was obtained.

A recent hæmorrhage was found in the cortex and adjacent white matter of the left cerebellar lobe, and measured 2 cm. from the periphery of the lobe laterally toward the interior, and almost 2 cm. antero-posteriorly. It extended to within 2 mm. of the surface of the lobe. It was situated in the lower medial portion of the left lobe, and in no way implicated the intrinsic nuclei.

A recent cerebral hæmorrhage had destroyed the right optic thalamus, internal capsule and lenticular nucleus. It extended to the external capsule. The head of the caudate nucleus escaped.

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LEGENDS.

Fig. 1. Hæmorrhage in the left lateral lobe of the cerebellum. The deviation of the head and eyes was towards the left.

Fig. 2. Hæmorrhage in the basal ganglia of the right cerebral hemisphere.

BABINSKI'S SIGN IN DIPHTHERIA.

By J. D. ROLLESTON, M.D.,

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AMONG the by no means numerous observers who have investigated the condition of the plantar reflex in acute infections, comparatively few have noted the presence of an extensor response. Thus Stanley Barnes, writing in 1904, from negative results obtained in septicæmia, pyæmia, malignant endocarditis, pneumococcal and other forms of pneumonia and enteric fever, concluded that the toxins of the various micro-organisms which give rise to these diseases cannot alter the character of the plantar reflex. Livierato, in 1907, in a study of the reflexes in typhoid fever, lobar pneumonia, erysipelas, influenza, acute rheumatism, and measles, stated that Babinski's sign was negative in every case. On the other hand, Léopold Lévi, in a paper read before the Société de Neurologie, in 1900, stated that he had found Babinski's sign present in 10 out of 20 cases of typhoid fever, and in 1906 the present writer found it in 4 out of 46 cases of this disease. Kiroff, in a communication to the above-mentioned Society in 1905, was the first to record an extensor response in scarlet fever. His observations were confirmed by C. Rolleston in 1908, who found it in 84 out of 185 cases. Gouget, on the other hand, in a recent study of scarlet fever states, that he was unable to confirm the results of these observers, but adds that none of the cases which he examined were fatal. The presence of Babinski's sign in diphtheria was first recorded by Kiroff in the communication already mentioned, and has since been alluded to by the present writer, who, in 1906, noted its unusual frequency in cases of precocious paralysis of the palate, and in 1908, in hæmorrhagic diphtheria.

The present paper is based on observations made on 877 cases of diphtheria in which the plantar reflex was investigated in the course of the last four years. An extensor response of the great toe with extension or flexion of the other toes was found to be present for varying periods in 172 cases, or 19·6 per cent.; in 29 flexion alternated with extension; and in 676 the normal flexion was present. The absence of any response was not observed in any case. Special care was taken by varying the

intensity of the stimulus to eliminate voluntary movements, so as to avoid mistaking for abnormal what was really a physiological movement of defence. Owing to the occurrence of Babinski's sign after large doses of strychnine (Babinski, Collier), it should be stated at the outset that no case had been treated with this drug. None of the cases which exhibited the extensor response showed any other signs of disease of the pyramidal system, nor was the response seen with special frequency in rickety children or in those who had learnt to walk late. High temperature and delirium, which are the usual associates of severe scarlet fever, and as such were present in Kiroff's cases, are exceptional in diphtheria, and were therefore found in very few of the present series. The character of the reflex was by no means the same in all cases. In some it was the deliberate movement indistinguishable from that met with in organic diseases of the pyramidal system, in others it more closely resembled the infantile response in the briskness with which all the toes were extended, while others showed an intermediate character.

In 33 cases the extensor response was at first bilateral, and afterwards was present on one side only before it was replaced by flexion. In 27 cases the extensor response was unilateral from the first, being present on 19 on the right, in 8 on the left side only. A transitional stage of one or more days was often observed, in which any of the following responses might be seen:—

1. All the toes yielded a flexor response, but the flexion of each hallux was less decided than that of the other toes.
2. The response was at first flexor, but prolonged stimulation produced extension of each hallux or of all the toes.
3. Alternate extension and flexion similar to what occurs normally in the development of the healthy child.

In many cases, however, none of these transitional stages was noted, and a well-marked extensor response present one day would be succeeded on the following by the normal flexion.

Age.—The systematic observations carried out independently of one another on a large number of children by Lovett Morse, Cattaneo, A. Léry, and Engstler agree in showing that though an extensor response is exceptional after the first year, no pathological significance can be attached to Babinski's sign

before the third year of life, after which date extension of the great toe is abnormal. The annexed table of the patients' ages shows that comparatively few infants are represented, so that the existence of the normal response cannot be attributed to an incompletely developed pyramidal tract.

TABLE I.

Years.	Cases examined.	Babinski cases.	Percentage.
0-1	2	2	100·0
1-2	33	12	36·36
2-3	65	17	26·1
3-4	98	28	28·5
4-5	111	24	21·6
5-6	162	29	17·9
6-7	104	24	23·07
7-8	82	16	19·5
8-9	45	7	15·5
9-10	37	5	14·05
10-20	100	8	8·0
20-50	38	0	0
	<hr/> 877	<hr/> 172	

It will be seen that the number of cases in the fourth year exceeds that met with in the third. Subsequently the frequency of the cases showing an extensor response gradually declines, and after the eighth year there is a decided fall. The duration of the sign is very brief at and after this age. In only three such cases did it persist after the throat became clean, and in two of these it was superseded by flexion on the following day.

Sex.—The sexes were almost equally affected, there being only a slight preponderance of the sign among females. 88, or 17·8 per cent., were males; 83, or 19·09 per cent., were females.

Duration.—Babinski's sign in diphtheria is essentially a phenomenon of the acute stage. In the great majority of cases it is replaced by a flexor response in convalescence. Thus out of 155 cases in which the plantar reflex was investigated throughout the disease, in 60 extension was replaced by flexion before the throat became clean; and in 9 the flexor response returned on the same day as the membrane disappeared, and in 62 in periods

ranging from one to forty-six days later. Of the remaining 24, 17 preserved the extensor response until death, which occurred between the fourth and fifteenth days of disease, and 7 until their discharge from hospital, which took place five to seven weeks after the throat had become clean. Although none of these cases showed any other signs of pyramidal disease, the duration of their extensor response exceeded that observed in a case of organic hemiplegia following diphtheria, in which the phenomenon was present for only twenty days (v. *Review*, 1905, p. 722). It may be mentioned that some of L. Lévi's typhoid patients also left the hospital two months after the onset of the disease with the sign still present. Similar cases of a persistent extensor response in the absence of other evidence of pyramidal disease were noted by C. Rolleston in scarlet fever. In some cases of the present series, after return of the normal plantar reflex, the supervention of an acute disease such as scarlet fever or a severe serum reaction was followed by the reappearance of Babinski's sign, which was replaced by flexion on subsidence of the acute attack.

Relation to Initial Attack.—The frequency and duration of an extensor response in diphtheria bear a direct relation to the character of the initial angina in exactly the same way that affection of the tendon jerks and actual paralysis are more common after severe than after mild diphtheria. This is clearly shown in the following table:—

TABLE II.

Character of diphtherial attack.	Cases examined.	Babinski cases.	Percentage.	Average duration.
Severe .	329	106	32·2	18·0 days.
Moderate .	174	25	14·3	6·7 „
Mild .	374	41	10·9	3·9 „
	<hr/> 877	<hr/> 172		

The severity of the Babinski cases is further shown by the fact that their mortality was 19·1 per cent. as compared with a mortality of 8·5 per cent. among the 877 cases.

As was to be anticipated from the foregoing remarks, the frequency and severity of the characteristic complications of diphtheria were above the average in the Babinski cases.

Thus among the 877 cases there were 167 paralysis cases, or 19·04 per cent., 65, or 7·4 per cent. of which were severe, while among the Babinski cases there were 53 paralysis cases, or 30·8 per cent., 28, or 16·2 per cent. of which were severe. So with albuminuria. The percentages of Babinski cases with this complication was 65·6, as compared with a percentage of 50·0 among all the cases.

A certain degree of prognostic value therefore attaches to the presence of Babinski's sign in diphtheria. On the other hand, as the figures above show, the phenomenon, though more frequent in severe cases, is by no means their exclusive appanage, nor is it to be regarded as of such unfavourable import as precocious paralysis of the palate, as the mortality of cases with this symptom ranges from 35 to 40 per cent.

Relation to Knee and Ankle Jerks.—The following figures show that, contrary to the findings of Kiroff in scarlet fever, in which all the Babinski cases showed an abolition of the knee jerks, in diphtheria these reflexes were present in the majority of cases. This is due to the fact that, as was shown by H. Mackenzie in 1890, early loss of knee jerks in diphtheria, except in fatal cases, is very rare. Babinski's sign being essentially a phenomenon of the acute stage, it is obvious that loss of tendon jerks is seldom associated with an extensor response.

As was shown in a previous paper by the writer, the frequency of affection of the ankle jerks was less than that of the knee jerks.

TABLE III.

		Condition of knee jerks, lost or sluggish.	Condition of ankle jerks. lost or sluggish.
Total number of cases examined	905	46·9 per cent.	37·01 per cent.
Babinski cases	172	39·5 „	34·3 „

It must be understood that these figures apply to the condition of the tendon jerks only during the time that the extensor response was obtained. In a considerable number of cases the knee and ankle jerks were active at an early stage of the disease, but were subsequently lost or rendered sluggish, so that affection

of these reflexes in the Babinski cases followed to their termination was decidedly above the average, as is shown in the following table :—

TABLE IV.

		Condition of knee jerks, lost or sluggish.	Condition of ankle jerks, lost or sluggish.
Total number of cases examined	905	46·9 per cent.	37·01 per cent.
Babinski cases followed to their ter- mination	155	60·0 „	50·0 „

Though the knee and ankle jerks were sometimes unusually brisk during the acute stage of diphtheria, true ankle clonus was never elicited. In three cases only a spurious clonus was obtained. Babinski himself was the first to draw attention to this dissociation of the extensor response and ankle clonus, and stated that though exaggeration of the tendon reflexes and ankle clonus were frequently associated with his sign, one may exist without the other. It may be added that ankle clonus, which is not infrequent in typhoid fever, was present in only five of the Babinski cases in that disease recorded by Lévi, who also draws attention to this dissociation.

Diagnostic Importance.—The extensor response is by no means pathognomonic of diphtheria among the acute infections. Its occasional presence in typhoid fever and scarlatina has already been mentioned. The writer has also found it in two out of six cases of lobar pneumonia admitted to hospital as typhoid fever, and Van Epps records a case where a typical Babinski's sign was found in a man suffering from phthisis, although he had no history nor physical signs of any organic nervous lesion. In spite of the fact that an extensor response may be met with in other and possibly all acute infections, it is less common in non-diphtheritic angina than in diphtheria. Out of 100 cases admitted to hospital certified to be suffering from diphtheria, but subsequently to be found to have other diseases, such as follicular tonsillitis, quinsy, and Vincent's angina, only

11 yielded an extensor response, thus showing the predilection of the diphtheria toxine for the nervous system. The presence of Babinski's sign in a case of doubtful angina may therefore be accorded a certain diagnostic value.

Pathogeny. — The transitory character of the extensor response in diphtheria renders it unlikely that any considerable change should have occurred in the pyramidal tract. A temporary perturbation is probably caused by the circulating toxins, as was suggested by Lévi in the case of typhoid fever and by Kiroff in scarlatina. The pyramidal system is affected in a similar manner to, though in a less degree than, the heart and kidneys, and the occurrence of Babinski's sign may be regarded as an outward manifestation of the reaction of the pyramidal tract to infection. In this connection it is well to recall that Babinski himself declared that the "toe phenomenon" may be determined by a perturbation in the pyramidal system, independent of its duration, intensity, and extent, and that it may sometimes constitute the only indication of this perturbation. This change in the character of the plantar reflex is all the more likely to occur in young persons whose pyramidal tracts, like the rest of their nervous system, are in a state of unstable equilibrium, which is liable to be upset by various influences. A reversion to the early type of response may be brought about not only by disease, but also by normal sleep. In sleeping children up to the age of eight years, according to Stanley Barnes, or twelve years, according to Collier, an extensor response may sometimes be obtained which in the waking state is replaced by flexion.

The transient affection of the pyramidal system in acute infections, as manifested by the extensor response, may be compared with the varying degree of meningeal involvement which lumbar puncture has shown to exist in these diseases to a much greater extent than was once imagined. In most of these cases there is not so much a meningitis as a meningeal reaction, which is indicated by some degree of hypertension or a slight lymphocytosis of the cerebro-spinal fluid. Complete recovery in such cases is the rule, but it is conceivable that the meninges may subsequently form a locus minoris resistentiæ. In like manner, in cases of acute infection showing Babinski's sign, the affection of the pyramidal tract, though ephemeral, may possibly predispose

this region to further attacks, and so account for certain nervous sequelæ of the specific fevers.

The possibility of an association of a meningeal reaction with Babinski's sign in diphtheria is a question which could only be settled by lumbar puncture on a large number of cases, which, in the absence of any therapeutical indication, could not be regarded as justifiable.

SUMMARY.

1. Babinski's sign was found in a considerable percentage (19·6 per cent.) of all cases of diphtheria, the character of the response being rapid, deliberate, or intermediate in character.

2. The extensor response in diphtheria is not confined to infants, but may be obtained, though with decreasing frequency and duration, especially after the eighth year, until adult life.

3. It is essentially a phenomenon of the acute stage, in most cases being replaced by flexion in convalescence. Transition stages often exist in which various forms of response may be obtained.

4. Babinski's sign is not pathognomonic of diphtheria among the acute infections, since it occurs in typhoid fever, scarlatina, lobar pneumonia, and probably other acute diseases; but its greater frequency in diphtheria than in non-diphtheritic angina accords the sign a certain diagnostic value.

5. It is more frequent and persistent in the severe than in the mild forms of diphtheria, as is shown by the character of the angina, the higher mortality, and greater frequency of paralysis and albuminuria among the cases in which it occurs. Its presence has, therefore, a certain prognostic value.

6. It is not associated with any special condition of the tendon jerks, and is never accompanied by ankle clonus.

7. It is probably due to a transitory perturbation of the pyramidal system by the circulating toxins, comparable to the slight degree of meningeal reaction which is a frequent occurrence in acute infections.

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Abstracts

PHYSIOLOGY.

FLEXION-REFLEX OF THE LIMB, CROSSED EXTENSION-(347) REFLEX, AND REFLEX STEPPING AND STANDING.

C. S. SHERRINGTON, *Journ. Physiol.*, April 26, 1910, p. 28.

THE study of these reflexes has been carried out in *decerebrate* and *spinal* preparations in cats and dogs. In decerebrate preparations the whole brain in front of the posterior colliculi is removed. In the hind limb the receptive field for the flexion-reflex includes the whole of the skin of the limb, but not of the inguinal, perineal, and gluteal regions, where stimulation may elicit extension. The reflex is also obtained from stimulation of the deep musculo-articular afferents. The writer gives the actions of the different muscles in tabular form; in general terms, contraction is stimulated in the flexors and inhibited in the extensors. One part of a muscle may contract and another part relax, and the muscles can therefore not be regarded as physiological entities. An analysis of the actions of the participating muscles shows a simultaneous co-ordination spoken of as the *reflex-figure*. Antagonistic muscles acting as prime movers at the same joint are dealt with by *reciprocal innervation*. Muscles which act as flexors at one joint and extensors at another are dealt with by *identical innervation*, an extension effect being prevented by the concomitant contraction of the flexors at the second joint. This is comparable to the well-known contraction of the wrist extensors during the grasp of

the hand, which prevents the flexor longus digitorum from flexing the wrist but allows it to flex the fingers. When a muscle has two actions, the one which is suppressed is the subsidiary one. Prime movers at one joint are used by the reflex at the same time as fixators for prime movers at another joint. For instance, the hip flexors not only flex the hip but also prevent the knee flexors (also hip extensors) from extending it, in this way enhancing the flexor effect at the knee. When contraction of the flexors occurs at one joint of a limb only, the flexors of the other joints, by reason of their attachments and acting merely as passive strings, cause flexion of their joints. In the actual reflex these latter muscles are in active contraction, and therefore the principle indicated in the non-contractile mechanics of the part is made use of and extended. In cases where a muscle passes across one joint only (a single-joint muscle) a subsidiary mechanical effect on neighbouring joints may take place, and this effect, again, is seen to be in harmony with the neural reflex taxis, as, for example, in the action of the brachialis anticus, which not only flexes the elbow but also flexes the shoulder. Two flexors working on the same joint and having subsidiary antagonistic actions (*e.g.* eversion and inversion) are contracted both together by the reflex (identical innervation), the subsidiary effects neutralizing each other. A prime mover which extends one joint and flexes another acts only in one capacity, and probably always at one joint. Thus the rectus femoris is used exclusively as a hip flexor, never as an extensor; and the gastrocnemius, potentially a knee flexor, is inhibited in the flexion-reflex. The apparent want of uniformity observed in the part played by the adductors in the flexion-reflex is probably attributable to the fact that the action of these muscles varies according to the position of the limb. In some muscles the reflex has no effect either in the way of excitation or inhibition. A strong reflex employs approximately, probably exactly, the same muscles as a weak one. The difference is merely one of degree of contraction in each muscle.

Flexion-reflex in one limb is accompanied by accessory movements in the other limbs, but these are not constant and are not to be regarded as an integral part of the reflex. The usual results are extension of the fellow limb of the crossed side, with extension and retraction of the homonymous limb, and flexion and protraction of the crossed limb of the other pair. Of these, the *crossed-extension reflex* of the twin limb is the most constant. It is brought about by reciprocal innervation exercised in an exactly opposite direction. The action and co-ordination of the muscles concerned in this reflex are found to exhibit precisely the same principles as regards contraction, inhibition, and non-vital mechanical action as those detailed for the flexion-reflex. The

receptive field of this crossed reflex is, however, wider, for stimulation of the afferent nerves of the groin and ischial and perineal regions, which evolve ipsilateral extension, give rise to crossed extension.

When the stimulus which causes the flexion-reflex is withdrawn a well-marked extension of the limb occurs. This is an active contraction of the muscles inhibited during the flexion phase, not a mere return to passive extension, and is known as the *rebound extension*.

In decerebrate preparations there is seen a tonic after-prolongation of the contraction, causing the limb to assume an attitude recalling the condition of a cataleptoid state which is entirely absent in spinal preparations. This tonic after-prolongation is found to be entirely confined to the extensor muscles. A spread of the reflex effect from the hind to the fore limbs is more readily obtained in the decerebrate preparation. In spinal preparations the rebound extension is often absent, and soon tires. During the continuance of the stimulus the limb reflexes of the decapitated preparation tend more than those of the decerebrate to exhibit rhythmic character with alternation of flexion and extension due to the development of a *central refractory phase*.

A stimulus of a nocuous quality, for instance a spring clip applied to the skin of the hind foot, causes steady flexion (occasionally broken at first by a few brief extensions as if to shake the object off) known as the *nociceptive flexion-reflex*, accompanied by rhythmic alternating extension and flexion of the crossed hind-limb and sometimes of the fore limbs (*spinal stepping*). In spinal preparations this reflex stepping can be elicited by non-nocuous stimuli, as by simply allowing the hind-limbs to hang passively pendent (*proprioceptive stimulus*). The stepping exhibits a flexion phase and an extension phase with an anterior turning-point after the former, and a posterior turning-point after the latter. The flexion phase in one limb is synchronous with the extension phase in the opposite fellow limb. The alternating flexion and extension result from a rhythmically recurring central refractory period for the primary response accompanied by a response of the previously irresponsive antagonistic centre for movement opposed to the primary movement. The movement of the primary response sets up proprioceptive stimuli evoking a limb movement in the opposite direction, which in turn produces proprioceptive stimuli resulting in the original movement, and so on. The alternating character of the movements in the two limbs is explained on the principle of the crossed extension reflex. Stepping is purely a proprioceptive reflex, and division of the cutaneous afferents has no effect on it.

Reflex standing due to a tonus of all the muscles which in the

normal posture of the animal counteract gravity is present in decerebrate preparations but not in spinal ones. This standing reflex is an extensor one, whereas the stepping reflex seen in spinal preparations is both flexor and extensor, the extensor reactions suffering more than the flexor from loss of subcortical prespinal centres. Like the spinal reflex the standing reflex is independent of the cutaneous afferents, nor is it impaired by removal of both otic labyrinths or severance of both nervi octavi. Reflex standing employs the same muscles as the extension phase of reflex stepping, and when reflex stepping can be elicited in decerebrate preparations the prespinal mechanism co-operates in the extension phase of the reflex step and renders it more effective. Further, it maintains the erect posture of the body, and thus enables the reflex stepping to accomplish an actual *reflex walking* or running, which is, of course, impossible in decapitate or spinal preparations.

HENRY J. DUNBAR.

THE DIFFERENCES BETWEEN THE SEXES IN THE DEVELOPMENT OF SPEECH. (348) ERNEST JONES, *Brit. Med. Journ.*, Sept. 1909, p. 413.

It has long been recognised that, on the whole, speech develops earlier and more fluently in the case of girls, and that these are much less prone than boys to speech defects. The results of a study are here recorded which go to show that the articulatory sounds with which girls *most* surpass boys are precisely those that are most easily taught by lip-reading to deaf-mute children. The hypothesis is propounded that in the development of speech unconscious lip-reading plays a greater part with girls than with boys, so that partial deafness is of greater significance to the latter, cutting off as it does the main avenue of education.

AUTHOR'S ABSTRACT.

PSYCHOLOGY.

THE ASSOCIATION METHOD. JUNG, *Amer. Journ. of Psychol.*, (349) April 1910, p. 219.

JUNG here publishes three lectures delivered last autumn at Clark University. A description is given of the application of the association method in practice, a subject to which Jung has so brilliantly contributed. Numerous illustrative examples are given, and in the third lecture the psycho-analysis is described of a case of a four-year-old girl, an interesting counterpart to the

case recently described by Freud in a five-year-old boy. Important remarks are added on the bearing of psycho-analytic knowledge to education.
ERNEST JONES.

FREUD'S PSYCHOLOGY. ERNEST JONES, *Psychological Bulletin*, (350) April 1910, p. 109.

A REVIEW of Freud's distinctive psychological theories. A short description is first given of his views on (1) psychical determinism, (2) affective processes, (3) the dynamic nature of mental processes, (4) psychical repression, (5) intra-psychical conflict, (6) infantile mental processes, (7) psycho-sexual trends. Then the application of these to the subjects of sexuality, dreams, wit, and certain matters of everyday life psychology is briefly stated.

AUTHOR'S ABSTRACT.

THE ORIGIN AND DEVELOPMENT OF PSYCHO-ANALYSIS. (351) FREUD, *Amer. Journ. of Psychol.*, April 1910, p. 181.

THIS masterly paper is an abbreviated account of the five lectures delivered by Freud last autumn at Clark University. In it is sketched the historical development of psycho-analysis, with the application of it to various fields of study.
ERNEST JONES.

THE PSYCHO-ANALYTIC METHOD OF FREUD. (*Die Psycho-* (352) *analytische Methode Freuds.*) M. ISSERLIN, *Ztsch. f. d. ges. Neurol. u. Psych.*, Bd. I., Ht. 1.

THE author, after giving a detailed exposition of the development of Freud's views, takes up as the main points to be criticised:— (1) The theory of infantile sexuality; (2) the psychological mechanisms emphasized by Freud—repression, determination, conversion, symbolism; (3) the method of analysis (psycho-analysis, interpretation). The weight of the criticism is directed against the method employed and against its claim to have scientific value. Freud lays great stress on the gaps which the patient's memory shows in the course of an analysis; wherever there are such gaps something must have been "repressed," there must have been a personal "resistance" to the submerged memories. He attributes a pathogenic importance to these "repressed" elements, and the analysis consists in bringing them to the surface again. Isserlin denies that there is any evidence that what is revealed in this way throws special light on the

symptoms or is of etiological significance. Associations in the course of a psycho-analysis may be elicited indefinitely, but there is no criterion to show when the etiological factors have been reached. The resistance of the patient may have many grounds, so that it is not an infallible clue to the etiology of the symptoms. According to Isserlin, therefore, the "resistance" in the sense and extent of Freud is not proven; in any case the analysis cannot prove that there is an etiological connection between a symptom and a submerged complex of ideas elicited by the analysis. The author makes the very significant admission that the analysis may disclose in the mental life of the patient factors which are important for the general understanding of his mental state. The essence of the whole criticism is that there is no proof of the etiological nexus; the connection rests merely upon its greater or less plausibility. This, of course, must be granted; when, however, a certain degree of plausibility is reached we are accustomed to regard this as equivalent to proof. We cannot expect mathematical proof of psychological laws. The proof of Freud's theories will only be satisfactory when the degree of plausibility becomes somewhat greater than it is at present; this can only come from the accumulation of individual observations along the lines indicated by Freud. It is impossible to prove that a certain ill-shaped piece of flint represents an arrow-head; but when it is seen in its place in a sufficiently large series the plausibility of the interpretation brings conviction. Freud may in his interpretations and combinations have shot far ahead of the material at present available for conviction; the immediate task is to increase the series of observations. Although Isserlin appears to be extremely antagonistic to the views of Freud, he admits the truth of certain fundamental points; even the mechanism of "repression" is referred to as furnishing a very important problem "for psychopathology, and as being obviously present in a number of cases. This repression of painful experiences or trends of thought may lead to their being more or less forgotten, but their emotional tone can influence the conscious life of the individual. Isserlin also admits the mechanism of the wish-dream. He considers that the above laws have been demonstrated by observations; in other words, their plausibility is such that he is convinced of their truth. He denies that the "conversion" of disturbing mental factors into physical symptoms is established; he admits, however, that the idea of conversion may have a value as a stimulus in constructing a theory of "hysteria." He admits that the discovery of traumatic occurrences may be often useful for the understanding of hysterical symptoms; he denies, however, that they have any decisive etiological significance.

As to the question of symbolism as expounded by Freud, and

as to the latter's views on the nature of infantile sexuality, Isserlin considers that the results are purely arbitrary. Here, again, the proof of the views must depend upon the accumulation of confirmatory evidence until the degree of plausibility is considered to be sufficient.

With Isserlin's views as to the necessity of modesty in therapeutic claims most workers will agree. On the whole the objections raised by him are of somewhat academic nature, while the admissions which he makes in the course of his criticism show that he has a much more sympathetic feeling for the views traversed than the form of his criticism would lead the reader to believe.

C. MACFIE CAMPBELL.

FREUD'S THEORY OF DREAMS. ERNEST JONES, *Amer. Journ. of Psychol.*, April 1910, p. 283.

THIS is a considerably extended form, with a number of illustrative examples, of the paper on this subject that appeared in the *Review* for March 1910.

AUTHOR'S ABSTRACT.

THE PATHOLOGICAL ANALYSIS OF DREAMS. FERENCZI, (354) *Amer. Journ. of Psychol.*, April 1910, p. 309.

A CLEAR, though elementary, account of Freud's theory of dreams is given, and a number of striking illustrations added.

ERNEST JONES.

PATHOLOGY.

EPENDYMAL AND PERIEPENDYMAL LESIONS IN DISSEMINATED SCLEROSIS. LHERMITTE and GUCCIONE, *Soc. de Neur. de Paris*, Feb. 24, 1910.

IN a typical case of disseminated sclerosis the authors found that the whole of the posterior horn of the left lateral ventricle had a greyish appearance. There was marked neuroglial sclerosis of the periventricular white substance, poor in neuroglial cells. The fibrils followed the lines of nerve fibrils, surrounding them completely. As a result the latter were rarefied, tortuous, and moniliform: some were reduced to irregular spiral threads. The ependymal epithelium was absolutely normal. Dilated tortuous vessels, surrounded by small round cell and plasma cell infiltration, ramified through the glial tissue.

A circular band of neuroglial sclerosis was also found to

surround the aqueduct of Sylvius. In this instance the cells of the epithelium lining the aqueduct were profoundly modified.

Apart from the anatomical interest of these changes, their pathogenic significance may be considerable.

S. A. K. WILSON.

THE PARATHYROIDES IN FOUR CASES OF PARALYSIS

(356) **AGITANS.** ROUSSY and CLUNET, *Soc. de Neur. de Paris*, Feb. 24, 1910.

IN all, the parathyroids were voluminous, and presented the histological characters of hyperfunctioning. Fatty vesicles were much less frequent than in normal adult glands. All the sections were characterised by the presence of acidophil cells, finely granular eosinophil cells, in great numbers. In addition, numerous colloid masses were found in the glands. The authors have not found similar changes in any of more than one hundred parathyroids taken from cases dying of various acute and chronic diseases. Parathyroid extract treatment proved very unsatisfactory.

S. A. K. WILSON.

OBSERVATIONS ON THE MORBID ANATOMY OF MENTAL

(357) **DISEASE.** G. A. WATSON, *Journ. Ment. Sc.*, April 1910, p. 227.

THE writer records the results of 301 autopsies at Rainhill Asylum. The points noted were (a) the weights of the stripped hemispheres, (b) the convolutional pattern, (c) the mental condition. Five groups of cases were formed according to the degree of morbid change: cases of gross brain disease, general paralysis, epilepsy, idiocy and imbecility being excluded. Groups I. and II. showed defect of brain weight without wasting, convolutional simplicity, and greater frequency of cerebral stigmata than the later groups. In the latter were noted defect of brain weight due to loss from wasting, and average or increased convolutional complexity. The general conclusion from the macroscopic examination was that the cases fall into two main classes, groups I. and II. being cases of subevolution or amentia, and groups III. to V. mostly of dissolution or dementia. With regard to vascular changes, the writer concludes that, while they may exist independently of cerebral wasting, and *vice versa*, all severe cases of wasting are accompanied by gross vascular disease.

The Rainhill results are compared with those of 364 cases recorded by Bolton at Claybury. The former showed an average

excess weight of 16 gm. in males and 29 gm. in females, which was not accounted for by difference in stature. An interesting fact was the lesser proportion of cases of gross wasting with vascular disease at Rainhill, as alcoholism is especially prevalent in the Lancashire district. The general conclusions from both sets of cases were identical.

A. L. TAYLOR.

ANATOMICAL CHANGES IN SENILE DEMENTIA. E. E. SOUTH-
(358) ARD, *Amer. Journ. of Insanity*, April 1910, p. 673.

AN important study, which should be read in the original, based on forty-two autopsies. An attempt is made to differentiate true atrophic cases from those secondary to vascular disease. Southard believes that the satellitosis and neuronophagy of the former are secondary to primary neurononic degeneration. Some excellent plates accompany the article.

ERNEST JONES.

AN ANATOMICAL ANALYSIS OF SEVENTY CASES OF SENILE
(359) **DEMENTIA.** M'GAFFIN, *Amer. Journ. of Insanity*, April 1910,
p. 649.

A SUMMARY paper, with the following conclusions:—The frontal convolutions undergo the most atrophy; general atrophy is uncommon.

The female brain loses more weight, and more often. Men are attacked much earlier than women, but live somewhat longer after the disease is established. Atrophy does not go hand-in-hand with atheromatous change. Some cases with symptoms pointing to senile dementia show neither arterio-sclerosis nor atrophy at autopsy.

ERNEST JONES.

THE BUTYRIC REACTION OF NOGUCHI AND MOORE IN
(360) **THE DIAGNOSIS OF SYPHILITIC AFFECTIONS OF**
THE CENTRAL NERVOUS SYSTEM. BAUDOUIN and
FRANÇAIS, *Rev. neur.*, May 30, 1910, p. 620.

THE reaction is positive in every case of syphilis of the central nervous system. It co-exists usually with lymphocytosis of the cerebro-spinal fluid, but not constantly so. On the other hand, it is wanting in some cases of tabes and general paralysis, and in some other conditions where lymphocytosis is present. The reaction is positive in some cases of tuberculosis, hence it cannot be considered specific.

S. A. K. WILSON.

ON THE RELATIONS OF IDIOCY TO SYPHILIS (Über die (361) *Beziehungen der Idiotie zur Syphilis.*) H. LIPPMANN (of Königsberg), *Deutsche Ztsch. f. Nervenhk.*, Bd. 39, Ht. 1, 2.

As a preliminary investigation the author examined 136 epileptics by Wassermann's serodiagnostic method; 5 gave a positive result. Of these 5, one had recently contracted syphilis, three had undoubtedly inherited syphilis, the fifth had possibly inherited syphilis. These results do not corroborate Nonne, who got a positive reaction in 7 out of 12 cases of idiopathic epilepsy; as a matter of fact Nonne's cases later received a different interpretation.

The connection of idiocy with syphilis was long suspected, and Heubner had found in 23 per cent. of his cases parental syphilis; others had denied the connection. Heyn, working in the Uchtspring Asylum, found parental syphilis in only 1·4 per cent. of the cases. Lippmann examined 78 cases in the Uchtspring Asylum serologically, and got a positive Wassermann in 7, *i.e.* in 9 per cent. He further examined 121 idiots in Dalldorf, which receives Berlin material, and got a positive result in 13·2 per cent. This 13·2 per cent. is really equivalent to 30 per cent., for Plaut found that only 44 per cent. of children of syphilitic parents gave a positive reaction.

The author further examined the Dalldorf material from the point of view of anamnesis and physical stigmata, including changes in the eye-grounds. In 77 cases both series of data were obtained, and inherited syphilis was certain in 31, *i.e.* 40·2 per cent.; the author tabulates the results in each case. Even among the cases considered negative several were suspicious. Of the 44 cases without an anamnesis, inherited syphilis was certain in 10 cases. Thus out of 121 cases 33·8 per cent. were hereditary syphilitics. These figures naturally represent the minimum.

Ziehen and Fournier have both emphasized the good results of antisyphilitic treatment of certain defective children. The author, on the basis of his results, recommends a vigorous antisyphilitic treatment on the earliest signs of idiocy developing. He also advocates a wide application of the Wassermann reaction in gynæcological clinics, foundling asylums, and lying-in hospitals, so that latent syphilis in mother and child may be discovered, and suitable treatment be adopted. C. MACFIE CAMPBELL.

THE STUDY OF FAMILIAL SYPHILIS BY WASSERMANN'S

(362) **REACTION.** (*Contribution à l'étude de la syphilis familiale. Recherches à l'aide de la méthode de Wassermann.*) J. BABINSKI and A. BARRE, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, xxix., 1910, p. 595.

FAMILIAL syphilis, which includes both the conjugal and inherited varieties, is often difficult to detect, and may be only brought to light by the development of some parasyphilitic affection. As Babinski pointed out in 1900, systematic examination of persons married to tabetics or general paralytics has proved that conjugal parasyphilis is much commoner than had hitherto been suspected. As tabes and general paralysis are relatively rare sequels of syphilis, Babinski concluded that conjugal syphilis is fairly common. In the present paper twelve cases are recorded in which the husband or mother was suffering from tabes or general paralysis, while the wife and children were apparently healthy. In six cases, however, the wife, and in three the children, gave a positive Wassermann's reaction, and in three the reaction was negative.

Further investigation is necessary to determine the real frequency of conjugal syphilis. In the meantime, in cases where the husband or wife has had syphilis the other members of the family should be subjected to examination by Wassermann's reaction.

J. D. ROLLESTON.

THE APPLICATION OF IMMUNITY REACTION TO THE

(363) **CEREBRO-SPINAL FLUID.** J. W. MOORE, *Amer. Journ. of Insanity*, April 1910, p. 537.

AN account of the Wassermann reaction ; nothing new is brought out.

ERNEST JONES.

CLINICAL NEUROLOGY.**SYNDROME OF SPASM, PARESIS AND FACIAL NEURALGIA,**

(364) **ETC.** (*Syndrom von Spasmus, Parese und Neuralgia facialis, mit Hemiatrophia, okulären und anderartigen sympathischen Symptomen verbunden.*) GOTTHARD SÖDERBERGH, *Nord. Med. Arkiv.*, 1909, Afd. ii., Häft 3 and 4, No. 9.

THIS paper is an account of a case of a woman, aged 57, who suffered from spasm, paralysis, and neuralgia of one half of the face, along with hemiatrophy and ocular sympathetic symptoms. The

fifth nerve showed no changes, and the author wishes to point out that such a condition might be produced by a lesion of the facial nerve, involving that part of it from the genu to the carotid canal.

A. NINIAN BRUCE.

POST-TYPHOID POLYNEURITIS WITH FACIAL DIPLEGIA.

(365) (*Polyneuritis posttyphica mit Diplegia facialis.*) ST MANCINI,
Wien. Med. Woch., No. 18, 1910, S. 1036.

A MAN, aged 25, with no morbid antecedents, had an ordinary attack of typhoid fever, in which the diagnosis was confirmed by Widal's reaction. Less than a week after the temperature had become normal it rose again, and he had severe pain in the lower limbs. In a few days the pain diminished, but was followed by pronounced weakness in all the limbs, which, in the course of a month, developed into actual paralysis. On admission to hospital, in April 1909, there was double facial paralysis with partial R.D. None of the other cranial nerves were affected. Examination of the upper limbs, in which the electrical reactions were normal, showed incipient claw-hand. There was complete flaccid paralysis of the lower limbs, with complete R.D. in the sciatic and partial R.D. in the anterior crural regions. The knee and ankle jerks were abolished. Paræsthesia was present in all the limbs. The sphincters were intact. During the first three months in hospital the lesions remained unchanged, but in July and August considerable improvement took place, first in the upper limbs and then in the face, in both of which complete restoration of function finally resulted. Sufficient improvement occurred in the lower limbs to enable the patient to walk with support. No previous case has been recorded of polyneuritis with facial diplegia occurring in typhoid fever. Examination of the blood proved that the polyneuritis was due to the typhoid toxine alone, for not only was Widal's reaction positive, but the characteristic leucopenia excluded the possibility of the complication being due to pyogenic organisms which usually play a part in the numerous complications of typhoid fever. J. D. ROLLESTON.

COPPER NEURITIS. (*Ein Fall von Kupferneuritis.*) AUERBACH,
(366) *D. Ztschr. f. Nervenheilk.*, Bd. 39, 1910, S. 115.

BOTH Remak and Oppenheim are sceptical as to the existence of neuritis from chronic copper poisoning. Auerbach, however, records a case of irregular neuritis occurring in a copper-smith, aged 40, which he attributes to copper poisoning. The teeth and

gums were healthy, and there was no green line to be seen. The patient had pain and weakness in certain muscles of the right upper limb, chiefly in the large proximal muscles, also in the right lower limb, specially in the gluteal muscles. The affected muscles showed partial reactions of degeneration. There was some sensory loss on the outer posterior aspect of the right hand and forearm. The right knee jerk and left ankle jerk were absent. The sphincters were unaffected.

The patient improved under treatment, but on resuming his occupation he relapsed.

PURVES STEWART.

TRAUMATIC ROOT PARALYSES OF THE BRACHIAL PLEXUS.

(367) (*Paralysies radiculaires traumatiques du plexus brachial.*)

VANDENBOSSCHE, *Revue de Chir.*, May 10, 1910.

THE author reports very fully four cases of different types of root paralysis, traumatic in origin, all of which came under his personal observation in 1908 and 1909. All were carefully examined on several occasions, the electrical reactions of the muscles receiving full attention.

Case No. 1 had sustained a dislocation of the head of the humerus due to a violent fall on the shoulder. Reduction had been effected at the time without difficulty, but marked sensory and motor paralysis of the arm were found to be present after reduction. The sensory paralysis passed off in a few days, but the motor palsy remained. When examined a month after the accident, it was found that while roots C_8 and D_1 were chiefly implicated, roots C_7 and C_6 were affected to a less extent. No oculo-pupillary phenomena were present. When seen a year later the condition was not much improved. The absence of sensory lesions clearly pointed to a root and not to a trunk lesion, while the progress of the case showed that, if total rupture had not taken place, at least injury of a very severe nature from stretching and cicatricial compression had occurred.

Case No. 2 was thrown from a horse, and, as in the above case, a dislocation of the shoulder resulted which was easily reduced. Considerable motor and some sensory paralysis was present at first. At the end of a year, however, under massage, electricity, and douching, much improvement occurred. A small area of sensory paralysis was still present. No oculo-pupillary phenomena were observed. The symptoms pointed to implication of roots D_1 and C_8 , and possibly, very irregularly, of root C_5 . Here, evidently, complete rupture had not taken place, but a partial rupture by stretching, with or without subsequent cicatricial compression.

Case No. 3 received his injury while swinging a heavy hammer. Motor symptoms pointing to injury of roots D_1 and C_8 were present, and sensory symptoms (somewhat irregular) implicating C_6 , C_7 , C_8 , and D_1 . Four months later the latter had completely disappeared, and considerable improvement of the motor symptoms had occurred. No oculo-pupillary phenomena. In this case, also, the author considers that complete rupture of the roots involved had not taken place.

Case 4.—This man, four years before, had fallen off his bicycle and severely injured his shoulder. He called in no doctor, but stated that his arm was useless for more than a month. When examined in 1909 by Vandenbossche, a motor paralysis, pointing to a lesion of roots C_5 and C_8 , was found, and, in addition, a small area of anæsthesia corresponding to the area of the circumflex nerve. The author is uncertain whether to ascribe this to a superadded trunk lesion, or to regard it as possibly the remains of a more extensive *sensory root* lesion of C_5 .

In classifying his four cases, Vandenbossche arranges them as follows:—

- Case 1. Root paralysis, type motor complex.
- Case 2. Root paralysis, type mixed, inferior, incomplete.
- Case 3. Root paralysis, type mixed, inferior.
- Case 4. Root paralysis, type mixed, superior (Duchenne-Erb).

In discussing the whole subject, among special points emphasised are the following:—(1) That in traumatic root palsies of the brachial plexus complex types are met with, differing considerably from the classical ones usually described. (2) That motor phenomena are predominant. (3) That, taking into account the number of possible lesions, the possible association of trunk lesions, the tendency of certain symptoms to pass off, an exact diagnosis is often most difficult. (4) That stretching or compression as a cause of the paralysis should be kept in mind with regard to prognosis, since such cases generally show marked improvement under suitable treatment. (5) In bad cases there is a distinct field for surgical intervention, whether by attacking the actual site of the lesion (*chirurgie radiculo-medullaire*), or by peripheral orthopedic measures, such as tendon transplantation, nerve anastomosis, etc. (6) Frequent as symptoms pointing to involvement of the sympathetic are in lesions of C_8 and D_1 , they are not constant.

A. A. SCOT SKIRVING.

TABES AND AMYOTROPHY IN THE COURSE OF A SYPHILITIC MENINGO-ENCEPHALO-MYELITIS. (368) **LITIC** MOSNY and BARAT, *Rev. neurol.*, April 30, 1910, p. 461.

A CASE of tabes with bilateral involvement of the 3rd, 4th, 5th, 6th and 11th cranial nerves, and unilateral involvement of the 7th and the 12th; advanced amyotrophy of the arms of the Aran-Duchenne type, and involvement of the muscles of the back and neck, and, to a less extent, of the legs. In twenty months the amyotrophy has established itself, and its rate of progression is very remarkable, for, in less than three months, and while under observation, the frontalis, masseters, and anterior tibial group have wasted. The authors argue that the difference in the rate of development of amyotrophic symptoms and of tabetic symptoms is sufficient reason for considering the processes as distinct, or, rather, for considering them as clinical syndromes forming separate localisations of the same disease, namely, syphilitic meningo-encephalo-myelitis. It attacks the posterior part of the cord in the lumbar region and the anterior part of the cord in the cervical region.

S. A. K. WILSON.

PROPHYLAXIS IN INFANTILE PARALYSIS. (Beiträge zur Prophylaxe der epidemischen Kinderlähmung.) (369) **P. H. RÖMER** and **K. JOSEPH**, *Münch. med. Woch.*, May 3, 1910, S. 945.

THE authors regard direct contact with an individual who is carrying poliomyelitis virus in his mouth or throat as the probable source of new cases. The virus is known to remain quite virulent after a month's exposure in a dry condition, but they find experimentally that it is destroyed by formaline disinfection, and recommend this for rooms in which acute cases of the disease have been. Active immunisation against the disease is also possible, as the serum of monkeys which have recovered from the disease or have been suitably immunised with the attenuated virus destroys the virus *in vitro*. The presence of specific active antibodies may be regarded as absolutely proven.

J. H. HARVEY PIRIE.

TWO CASES OF CHRONIC AMYOTROPHY CONSECUTIVE TO INFANTILE PARALYSIS, ETC. (Deux cas d'amyotrophie chronique consécutive à la paralysie spinale dont l'un avec examen anatomique.) (370) **PASTINE**, *Rev. neurol.*, April 30, 1910, p. 466.

WHEN generalized amyotrophy supervenes in an old case of infantile paralysis it is usually after an interval of fifteen,

twenty, or thirty years. In one of the cases reported here the interval was no less than seventy-five years. The explanation of the "relapse" is very difficult and uncertain; it is in the reported cases of the nature of a chronic anterior poliomyelitis.

S. A. K. WILSON.

THE EARLY DIAGNOSIS OF MULTIPLE SCLEROSIS (SENSORY (371) ARM-TYPE). (Zur Frühdiagnose der multiplen Sklerose (sensibler armtypus).) R. FINKELNBURG, *Münch. med. Woch.*, April 26, 1910, S. 898.

FOR multiple sclerosis to commence with an affection of the upper extremity and with predominant sensory symptoms is certainly unusual; the writer has recently come across a number of such cases, and they are here recorded. Several ran a very acute course. The most weighty single symptom suggesting multiple sclerosis seems to be a disturbance of the sense of position of the limb, but of course a certain diagnosis can seldom be made until further cord or brain symptoms develop.

J. H. HARVEY PIRIE.

OCULAR SYMPTOMS IN COMMENCING MULTIPLE SCLEROSIS. (372) (Über die Augenstörungen bei beginnender multipler Sklerose.) WINDMÜLLER, *D. Ztschr. f. Nervenheilk.*, Bd. 39, 1910, S. 1.

THE material on which this article is based consists of 90 cases of multiple sclerosis, in which the ocular symptoms were noted by Windmüller. The classic combination of nystagmus, scanning speech, and intention-tremor is only met with exceptionally. Of the early symptoms of multiple sclerosis, the most constant and important are affections of the optic nerves, shown not only by recognisable changes in the discs, but also by subjective visual symptoms. The visual defects may be slight and transient, and are therefore liable to escape notice. In Windmüller's series, 42 cases out of 90, *i.e.* almost half, commenced with visual symptoms. These are of various kinds. Pains in the head and eyes may precede visual defects; not infrequently there is giddiness; or there may be subjective specks before the eyes, flashes of light, cloudy vision, etc. The onset of visual phenomena may be sudden or gradual. They are often confined to one eye at first, or at least, are more marked in one eye than in the other. There may be complete amblyopia, which not infrequently clears up completely, leaving either a normal optic disc or pallor of the temporal side, and perhaps a small central scotoma. The chief characteristic of

the visual symptoms in multiple sclerosis is the marked disproportion between the structural changes as seen with the ophthalmoscope, and the visual acuity and visual field on testing the patient. Distinct atrophic changes may be unaccompanied by visual symptoms, whilst, on the other hand, even amblyopia of long standing may be associated with normal ophthalmoscopic appearances.

The transitory character of the blindness in many instances, may in early cases lead to a wrong diagnosis of hysteria in young women, or of syphilitic affection of the optic nerve in male patients, especially when the symptoms happen to clear up under treatment by mercury or iodides. Female patients not infrequently observe an intensification of the visual trouble during pregnancy and even during menstruation. Physical and mental exertion also tend to aggravate the visual defects. A large proportion of cases of primary retrobulbar neuritis are due to multiple sclerosis.

Changes in the optic discs, visible with the ophthalmoscope, are more frequent than is commonly appreciated. Complete optic atrophy is rare. More commonly we find slowly increasing pallor of one or both of the discs, especially of the temporal halves, similar to what is seen in toxic amblyopia.

The disproportion between visual symptoms and ophthalmoscopic appearances is the chief point of diagnosis between the amblyopia of multiple sclerosis and that of toxic amblyopia. Or we may have temporal pallor of one disc, with incomplete diffuse atrophy of the other.

True choked disc, although rare in multiple sclerosis, has several times been observed. Windmüller has observed one such case. Fleischer has recorded a case with retrobulbar neuritis and negative ophthalmoscopic appearances in the one eye, and optic neuritis with choked disc in the other.

The commonest abnormality of the visual field in multiple sclerosis is a central scotoma, unilateral or bilateral, in which area there is diminution rather than loss of light-perception. Hemi-anopia is rare. Loss of colour-sense sometimes occurs in multiple sclerosis, red and green being lost, while yellow and blue are preserved (in contrast to hysteria).

Compared with the above-mentioned affections of the optic nerve, other ocular phenomena are much less frequent. We must distinguish between true nystagmus, where there is a continuous to-and-fro swinging movement of the eyes at rest, analogous to true intention-tremor, and nystagmoid jerks, due to slight paresis of the ocular muscles, and consisting in slight jerks of both eyes on extreme movement in some particular direction, especially on lateral deviation. This short, jerky movement occurs towards the very limit of the movement, the tired muscles slowly yielding, and

being brought sharply back to the extreme position by an effort. These short efforts occur at the rate of two or three per second, alternately with a slower swing-back of the globes from the extreme lateral position.

Nystagmoid jerking is commoner in disseminated sclerosis than true nystagmus, but its diagnostic value is comparatively small, since it occurs in other organic diseases, such as tabes, and may even be present in healthy persons.

Transient ocular palsies, with corresponding diplopia, have long been recognised as an important phenomenon of multiple sclerosis; chronic ophthalmoplegia externa is less common.

Pupillary abnormalities are of comparatively little diagnostic importance. Inequality of the pupils occurs in too many other conditions to be of value. Irregularity of the pupils does not occur. The reaction to light may be unequal on the two sides. Sluggish reaction to light occurs occasionally. Hippus has no diagnostic significance. Fixity of the pupil to light, together with miosis, as in tabes, is rare, but has been established in at least one case which came to autopsy.

Recently, a peculiar dark greenish tint of the periphery of the cornea in the deeper layers has been described in several cases of disseminated sclerosis by Kayser, Fleischer, Salus, and others. Kayser considers this pigmentation to be congenital. In one of Fleischer's cases of "pseudo-sclerosis," in which the cornea was thus pigmented, no organic disease of the central nervous system was found at the autopsy, but there was hepatic and renal cirrhosis, with splenic enlargement. Fleischer regards this corneal pigmentation as a hæmachromatosis. Windmüller considers corneal pigmentation as valueless for the diagnosis of disseminated sclerosis.

An exhaustive bibliography of 304 references is appended.

PURVES STEWART.

**THREE CASES OF SPINAL TUMOUR OBSERVED WITHIN A
(373) PERIOD OF TEN DAYS.** W. C. KRAUSS, *Journ. of Nerv. and
Ment. Dis.*, April 1910, p. 222.

THREE cases are fully reported from the clinical, surgical, and pathological point of view. Krauss calls attention, as a point in local diagnosis, to the fact that the pressure of cerebro-spinal fluid is very different above and below the level of tumour.

ERNEST JONES.

ANÆSTHESIA AND THE LACK OF IT IN THE DIAGNOSIS OF
(374) SPINAL CORD TUMOURS. PEARCE BAILEY, *Journ. of Nerv.*
and Ment. Dis., April 1910, p. 217.

THREE cases are briefly reported to support Bailey's contention that the absence of anæsthesia is an important point as telling against the diagnosis of spinal tumour. ERNEST JONES.

MENINGOCOCCAL MENINGOMYELITIS, ETC. (Meningomyélite
 (375) meningococcique à localisation exclusivement dorso-lombaire
 et simulant la myélite transverse.) DE MASSARY and
 CHATELIN, *Rev. neur.*, May 30, 1910, p. 613.

A PATIENT, aged 28, developed a typical acute transverse myelitis and died on the sixth day. Lumbar puncture, performed without any particular expectation of results, showed in an unmistakable way that the lesion was really meningomyelitic, the meningococcus of Weichselbaum being found, and at the autopsy the pathological diagnosis was abundantly confirmed. The interest of the case consists in the gravity of the medullary symptoms completely masking the meningeal ones. The variability of the medullary lesions in meningitis is remarkable. As a rule they are slight and unsystematised. Frequently medullary symptoms persist after meningeal ones have disappeared. In the present instance the lesion was strictly limited to the lumbar enlargement.

S. A. K. WILSON.

RIGHT HEMIPLEGIA WITH APRAXIA OF THE LEFT ARM.
(376) VOLUNTARY AKINESIS AND REFLEX HYPERKINESIS
ON THE PARALYSED SIDE. (Sur un cas d'hémiplégie
 droite avec apraxie du membre supérieur gauche. Phénomènes
 d'akinésie volontaire et d'hyperkinésie réflexe du côté par-
 lysé.) CLAUDE, *Soc. de Neur. de Paris*, Feb. 24, 1910.

THE patient was a woman of 55, who had a stroke on the right side, producing complete hemiplegia without hypotonia. In striking contrast to this complete paralysis of all voluntary movements, it was found that pinching the skin of the thigh produced a sudden and violent flexion of the limb. Similarly, pinching the skin of the leg produced flexion of the foot. Pinching the skin of the forearm produced sudden flexion at the elbow, with pronation of the forearm and abduction of the hand. The left arm was

dyspraxic, not entirely apraxic. Its muscular force was well preserved.

Post-mortem, in the left hemisphere a small cystic softening was found, just in front of the anterior extremity of the lateral ventricle, certainly not of recent origin. Small points of softening were found in the putamen. In the right hemisphere the lenticular nucleus was reduced in size and the seat of old small hæmorrhagic softenings; a small cystic area of softening was also found in the posterior part of the white matter of the frontal lobe.

S. A. K. WILSON.

BILATERAL SPHYGMOMANOMETRY IN HEMIPLEGIA. (La (377) *sphygmomanométrie bilatérale en particulier chez les hémiplégiques.*) L. RIMBAUD, *Montpellier méd.*, xxx., 1910, p. 313.

RIMBAUD found that whereas in health, or in those diseases which were not unilateral, the arterial tension was the same or nearly so on both sides, in unilateral affections, especially hemiplegia, there was usually a marked difference in tension. Out of 21 cases of hemiplegia, in only 2 was the tension the same on both sides, in 1 case there was 1 centimetre difference, and in 10, 5 centimetres or more.

In 7 recent cases there was relative hypotension on the hemiplegic side, while in 10 old cases this side showed a relative hypertension. Rimbaud concludes by emphasising the necessity of bilateral sphygmomanometry in cases of high tension, in which there may be several centimetres difference between the two sides.

J. D. ROLLESTON.

THE IDENTITY OF NÉRI'S SIGN IN ORGANIC HEMIPLEGIA (378) **WITH KERNIG'S SIGN.** SAINTON, *Rev. neur.*, May 30 1910, p. 618.

SAINTON shows that Néri's sign (described in this *Review*, June 1910, p. 385) is identical with the classical Kernig's sign.

S. A. K. WILSON.

MENINGITIS AND CONDITIONS SIMULATING MENINGITIS. (379) MEARA, *Arch. of Pediat.*, April 1910.

THE writer describes the various forms of meningitis occurring in children, and relates numerous cases illustrative of each.

1. Tuberculous meningitis: In 81 per cent. of his cases the leucocyte count was over 15,000. In 94 per cent. tubercle bacilli, were found in the cerebro-spinal fluid.

2. Cerebro-spinal meningitis: The most striking differences from tuberculous meningitis were suddenness of onset, delirium, opisthotonos, Kernig's sign, high fever, eruption, and high leucocyte count.

3. Simple suppurative cases due to any of the pyogenic organisms, pneumococcus, streptococcus, typhoid bacillus, etc. The symptoms here usually simulate cerebro-spinal meningitis, and bacteriological examination of cerebro-spinal fluid is necessary.

4. A group of cases in which there are typical signs of meningitis, but which on examination of cerebro-spinal fluid or on autopsy fail to show true meningitis.

In a certain percentage of these a serous meningitis is present. One of the commonest causes in the writer's experience is the toxin in pneumonia; others are gastroenteritis and influenza.

As examples of conditions which simulate meningitis, he describes a case of pachymeningitis hæmorrhagica interna in a child of 3½ months, and some cases of cerebral hæmorrhage resulting from injury at birth.

F. D. SIMPSON.

ACUTE MENINGITIS IN HEREDITARY SYPHILIS. RECOVERY.

(380) (*Méningite aiguë chez un hérédo-syphilitique. Guérison.*)

BILLET, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, xxix., 1910, p. 570.

A BOY, aged 11 years, on the tenth day of a mild attack of measles suddenly complained of headache, and vomited. During the next few days the symptoms closely resembled those of tuberculous meningitis. Lumbar puncture gave issue to a clear fluid under hypertension, free from cellular or microbic contents. Inoculation of guinea-pigs proved negative. On inquiry it was found that the father had had a frontal gumma four years previously, though he had never noticed any primary or secondary lesions, and the mother had had no miscarriages. The boy was therefore given anti-syphilitic treatment, and made a rapid recovery. His blood yielded a positive Wassermann's reaction.

J. D. ROLLESTON.

COMBINED TUBERCULOUS AND MENINGOCOCCIC MENINGITIS.

(381) (*Sur un cas de méningite mixte tuberculeuse et méningococcique.*) COMBE, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, xxix., 1910, p. 474.

A MAN, aged 22, whose sister had died of tuberculous meningitis, was admitted to hospital with meningeal symptoms which had developed suddenly during an epidemic of cerebro-spinal meningitis. Anti-meningococcic serum was administered daily until

death, which occurred a week after admission. The cerebro-spinal fluid first showed a well-marked lymphocytosis, but subsequently a polynucleosis, which was finally replaced by lymphocytosis before death. No meningococci were found in the fluid, but the meningococcic precipito-reaction was positive. On the day before death, when the tuberculous precipito-reaction was also positive, numerous tubercle bacilli were found. The autopsy showed a purulent meningitis predominant, though not exclusively localised at the base. No naked-eye nor microscopical lesions of tubercle were seen in the pia mater, but numerous tubercle bacilli as well as meningococci were found in smears taken from the meninges.

J. D. ROLLESTON.

INFLUENZAL MENINGITIS. FREDERICK E. BATTEN, *Lancet*, June (382) 18, 1910, p. 1677.

THIS is a short account of five cases of influenzal meningitis in children. The symptoms are exactly similar to those which occur in the meningococcal form of the disease, and the diagnosis must depend on bacteriological examination of the fluid obtained by lumbar puncture. Four of the cases were fatal; in the one in which recovery occurred, urotropin was given in large doses, and it would seem that this treatment is worthy of further trial, as it is an ascertained fact that a sufficient amount of the drug reaches the cerebro-spinal fluid to exercise a decided inhibitory effect on the growth of organisms. Vaccine treatment was employed in several of the other cases.

J. H. HARVEY PIRIE.

ILL-DEVELOPED MENINGEAL SYMPTOMS IN MENINGOCOCCUS

(383) **CARRIERS.** (*Manifestations méningées frustes chez des porteurs de méningococques.*) G. E. SCHNEIDER, SICRE, E. COMBE, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, xxix., 1910, p. 667.

DURING an epidemic of cerebro-spinal meningitis not infrequently cases occur in which the meningeal symptoms are scanty and ill-marked. The writers record six illustrative cases characterised by sudden onset, severe headache, slight naso-pharyngeal catarrh, and short duration. Examination of the blood and cerebro-spinal fluid was negative, but meningococci were found in the naso-pharyngeal mucus. The writers suggest that the ill-development of the meningeal symptoms is due to the situation of the organisms, the reaction of the meninges to infection being different from that

shown when the meningococci or their toxins are present in the cerebro-spinal fluid.

J. D. ROLLESTON.

THE MENINGEAL COMPLICATIONS OF MUMPS. (Complications (384) *meningitiques des oreillons*.) A. PERRIN, *Thèses de Toulouse*, 1908-9, No. 827.

THE thesis contains the histories of ten cases, including the following two hitherto unpublished. The first was that of a boy, aged 11 years, whose symptoms were headache, vomiting, mydriasis, photophobia, the meningeal streak, and a pulse of 58. Recovery took place. The second was a fatal case in a soldier, in whom lumbar puncture gave issue to a purulent fluid containing streptococci and staphylococci. Death was preceded by left hemiplegia and contracture, associated with right facial palsy. The autopsy showed a purulent cerebro-spinal meningitis. (*Cf. Review*, 1907, p. 301, and 1908, p. 249.)

J. D. ROLLESTON.

CEREBRAL ANGIOMA. (Über die cavernöse Blutgeschwulst des (385) Gehirns.) M. ASTWAZATUROFF, *Frankf. Ztschrft. f. Path.*, Bd. 4, Hft. 3, S. 482.

THIS form of tumour—cavernous angioma—is an exceedingly rare one in the central nervous system. Of the few cases that have been described, nearly all have been in women, and trauma seems to play some part in the etiology. The writer's case occurred in a woman of 35. She had had a slight head-injury two years before, and since then had often complained of headache. Suddenly she was seized with what may be summed up as "general head symptoms"—loss of consciousness, vomiting, muscular twitchings, etc. She died in ten days, the diagnosis of the case being cerebro-spinal meningitis, as there were among other symptoms marked rigidity of the neck, a rise of temperature to 39°·8 C., and diplococci were found in the cerebro-spinal fluid. Post-mortem, however, there was found a cavernous angioma of the right frontal lobe. Microscopically the structure was that of the typical angioma, some of the spaces containing fresh blood, some old thrombi, many recent thrombi. The tumour abutted directly on brain substance without any capsule. Many of the vessels of the tumour were calcified, and in the surrounding brain matter was a zone of calcified vessels, which calcification was apparently responsible for the thrombosis and onset of symptoms.

J. H. HARVEY PIRIE.

**INTRACRANIAL TUMOUR RELIEVED BY A DECOMPRESSION
(386) OPERATION.** ROBERT KENNEDY, *Brit. Med. Journ.*, May 21,
1910.

THE patient, aged 26, commenced to be troubled with headache, giddiness, and some vomiting, in December 1908. In March 1909 vision in the left eye began to fail, and the right eye soon became also affected. By May he was quite blind in both eyes. In August, when examined, both discs showed optic atrophy, the pupils were widely dilated and did not respond to light, but ocular movements were unaffected. He had also severe pain in his head and had occasional vomiting. He answered questions slowly and showed other signs of intellectual torpor. Beyond these signs there were no others, except perhaps some loss of hearing in the left ear, and therefore localisation of the tumour was impossible. Urine was normal. Temperature was normal and pulse slow. As a decompressive procedure in August, a portion of bone was removed from the right parietal bone close to the lambdoid suture and the dura opened, and the soft parts sutured over the bulging brain. As a result of this operation headache and vomiting disappeared, and the patient returned feeling well to his home. At the end of November he returned to hospital, when the hernia ruptured and he died of meningitis. At the post-mortem examination Professor Muir found a fibro-glioma measuring $1\frac{1}{2}$ in. from before backwards and from side to side, and about 1 in. in thickness, situated to the left side of the pons, compressing the pons. The tumour had apparently grown from the membranes. The ventricles were found considerably dilated. In immediate contact with the growth were the trunks of the glossopharyngeal, vagus, auditory, facial, and trigeminal nerves, but none of these had been affected, except perhaps the auditory.

In performing the operation the site was chosen as the one least likely to interfere with the functions through destruction of the cortex, which frequently takes place in consequence of the protrusion. The site chosen was on the left side to avoid the educated association centres of the left side, the patient being a right-handed man. It was wholly behind the centres around the Rolandic fissure. It would have affected the optic radiation or the centre for vision, but in this case restoration of vision was impossible owing to the optic atrophy. The site over the posterior part of the parietal was therefore chosen in this case in preference to that over the temporo-sphenoidal region as Cushing recommends, and the result showed that the protrusion which resulted from the operation did not cause any new interference with the functions.

AUTHOR'S ABSTRACT.

TUMOUR OF THE OCCIPITAL LOBE SIMULATING TUMOUR

(387) **OF THE POSTERIOR CRANIAL FOSSA.** (*Geschwulst des Occipitallappens, durch die eine Geschwulst der hinteren Schädelgrube vorgettäuscht wurde.*) LASAREW, D. *Ztschr. f. Nervenheilk.*, Bd. 39, 1910, S. 130.

A WOMAN, aged 43, had the following symptoms, which appeared to point to a tumour in the left posterior fossa:—headaches, blindness, optic neuritis, ataxia of cerebellar type, weakness of the limbs on the left side, diminution of sensation in the left face, exophthalmos and right-sided ptosis. An exploratory operation was accordingly performed, but with negative results. A few hours later the patient died. At the autopsy there was found a papillomatous epithelioma, cystic in part, in the right occipital lobe, apparently arising from the ependyma of the lateral ventricle, and coming to the surface in the region of the cuneus. No special observations of the visual fields appear to have been made during life, blindness being already in an advanced stage when she came under observation. No visual hallucinations were complained of. The case is an interesting example of false localising symptoms.

PURVES STEWART.

THE DIFFERENTIAL DIAGNOSIS OF CEREBELLAR TUMOURS.

(388) ERNEST JONES, *Boston Med. and Surg. Journ.*, Aug. 26, 1909, p. 281.

A GENERAL review is first given of the symptomatology of cerebellar tumours. In the order of their diagnostic value the signs are placed as follows: first the ataxia, then the characteristic vertigo, the hypotonia, paresis, nystagmus and skew deviation. The differential diagnosis between lesions of the cerebellum and other intracranial lesions is then discussed in detail, and the difficulties of determining the side of the lesion pointed out and dealt with.

AUTHOR'S ABSTRACT.

A CONTRIBUTION TO THE STUDY OF PINEAL TUMOURS.

(389) (*Über Geschwülste des Corpus pineale.*) A. M. PAPPENHEIMEN, *Virchow's Archives*, April 1910, p. 122.

THE author records the case of a boy, aged 10—previously healthy—who was seized with headache and vomiting. A month later his vision began to fail. Optic neuritis of an intense degree developed.

Operation for relief of intracranial pressure was performed, the boy dying the next day.

A detailed description is given of the macro- and microscopic character of the growth, which was found post-mortem. It lay on the dorsal aspect of the midbrain, which it had infiltrated. The pineal body and corpora quadrigemina could not be distinguished from the growth. The Sylvian aqueduct was invaded, and a nodule of growth projected into the third ventricle in front, and into the fourth ventricle posteriorly. On section the growth presented a lobular arrangement. Microscopical examination showed the tumour to consist of light and dark staining portions, the former predominating. The latter consisted of closely-set, large rounded or polygonal cells, with sharp outlines; clear nucleus and nucleolus. The cells were separated into groups by bands of connective tissue, along which were arranged numbers of lymphocytes and a few plasma cells. The greater part of the growth was composed of cells of quite a different character. These were large, with ill-defined edges, and the protoplasm often vacuolated. There was no nucleolus. They resembled very closely the normal cells of the pineal body. Among them were numerous calcareous bodies, and in a few sections embryonic muscle fibres were to be seen.

The author gives a brief account of the literature of the subject, and discusses the relation of tumours of the pineal to the sexual precocity described by Marburg and others. He suggests the name of ependymal neuroglioma for such tumours as he describes.

C. M. HINDS HOWELL.

ENCAPSULATED CEREBRAL ABSCESS. JOHN A. C. MACEWEN,
(390) *Lancet*, June 4, 1910, p. 1533.

THIS case is noteworthy on account of the slight disturbances created by a large abscess in the left temporo-sphenoidal lobe, and in particular, of the absence of focal symptoms. Secondly to abscesses in the gluteal region and wrist, the patient, a man of 36, began to suffer from headache, vomiting, and loss of word-memory of an intermittent character. There were at first no motor symptoms save general weakness, then sluggishness of the left pupil and faint left facial paresis developed; the temperature was subnormal, and both eyes showed slight optic neuritis. The chief feature was a loss of memory for the names of many persons and things. After an attack of hiccough and vomiting he became comatose, with slight twitchings of the right arm; at operation some 2 oz. of pus was evacuated from the left temporo-sphenoidal lobe; the patient rallied, but twelve days later headache and other

symptoms came on, and death ensued. As cleared up by a post-mortem examination, the pathological condition turned out to be an encapsulated abscess, situated about 1 inch below the surface of the upper portion of the temporo-sphenoidal lobe, its inner wall being formed by the lining membrane of the descending horn of the lateral ventricle, into which it projected, while its upper wall encroached upon and crushed the island of Reil and adjacent parts. The whole ventricular system was greatly distended, and its lining membrane much thickened and congested.

J. H. HARVEY PIRIE.

A CASE OF THE BULBAR SYNDROME OF BABINSKI-
(391) **NAGEOTTE.** BAUDOUIN and SCHAEFFER, *Soc. de Neur. de Paris*, April 14, 1910.

A MALE patient of 39, who had had syphilis fifteen years previously suddenly developed the following symptoms:—Forced movements to the right, inco-ordination, more particularly on the right side, hemiasynergy, myosis on the right side, syringomyelic dissociation of sensibility on the opposite side of the body, the face not included.

It is undesirable to describe such symptoms as the syndrome of Babinski-Nageotte; they should preferably be classed as belonging to the group of lesions in the distribution of the posterior inferior cerebellar artery.

S. A. K. WILSON.

APRAXIA, APHASIA, AGNOSIA, AND DEMENTIA. ROSE and
(392) BENON, *Soc. de Psychiatrie de Paris*, April 21, 1910.

A WOMAN of 59 suffers from amnesia and inattention from mental confusion, and in addition shows apraxic, aphasic, and agnostic phenomena. "Ce trouble ne semble pas susceptible d'une localisation quelconque."

S. A. K. WILSON.

OBSERVATIONS ON A CASE OF PROTRACTED CEREBRO-
(393) **SPINAL SYPHILIS WITH STRIKING INTERMITTENT SYMPTOMS: ATTEMPT AT CORRELATION WITH ASCENDING MENINGOMYELITIS, CRANIAL NEURITIS, SUBCORTICAL ENCEPHALITIS, AND FOCAL ENCEPHALOMALACIA FOUND AT AUTOPSY.** PUTNAM and SOUTHARD, *Journ. of Nerv. and Ment. Dis.*, March 1910, p. 145.

THIS interesting case had a total duration of nineteen years. The nervous symptoms began five years after infection, and were very variable and manifold. The pathological changes are carefully

described, and are to a great extent correlated with the changing symptoms. The authors strongly urge a greater vigour in pushing anti-syphilitic treatment of such cases in the early stages. The paper should be read in the original. ERNEST JONES.

ANKLE CLONUS IN A CASE OF MAJOR HYSTERIA. HEARD (394) and DILLER, *Journ. of Nerv. and Ment. Dis.*, April 1910, p. 239.

THE patient, a girl of 19, suffered from hysterical convulsions, paralysis of the left arm, and hyperæsthesia of the left breast. The knee jerks were "excessively exaggerated," and ankle clonus was present on both sides. Unfortunately no careful description is given of the nature of the clonus, and evidently no graphic tracings were made. ERNEST JONES.

PATHOMIMESIS. IMITATION OF RINGWORM OF THE SCALP (395) BY A GIRL PREVIOUSLY AFFECTED WITH TINEA TONSURANS. (Cas de pathomimic. Imitation de plaques trichophytiques du cuir chevelu par me jeune fille anterieurement atteinte de teigne tondante.) G. THIBIERGE, *Bull. de la soc. franç. de dermat. et de syph.*, 1910, p. 68.

A GIRL, aged 19, applied for admission to the Hôpital St Louis for a disease of the scalp. She presented patches of alopecia resembling that caused by ringworm, but there was no naked eye or microscopic evidence of the fungus. Thibierge sent the girl on to Sabourand, who recognised her as an old patient of his whom he had cured of ringworm after three years' treatment at the special school. She had applied to him three months previously with similar lesions, when no trace of the parasite could be discovered. On being closely questioned she confessed that she had carried out the epilation herself, so as to procure admission to hospital, and so avoid living with an uncongenial relative. Examination showed absolute analgesia of the scalp, limbs, and pharyngeal mucosa. The general intelligence was below normal (*cf. Review*, 1908, p. 567, and 1909, p. 47). J. D. ROLLESTON.

THE DYSCHIRIC SYNDROME. ERNEST JONES, *Journ. Abnorm. Psychol.*, Dec. 1909-Jan. 1910, p. 311.

THIS is a general review of the clinical characteristics and significance of the syndrome described by the author under this title. (See *Rev. of Neurol. and Psychiatry*, Aug.-Sept. 1909, etc.)

AUTHOR'S ABSTRACT.

SOME OBSERVATIONS OF AN ISOLATED CASE OF FAMILY (397) PERIODIC PARALYSIS. MAX MAILHOUSE, *Journ. of Nerv. and Ment. Dis.*, April 1910, p. 209.

A TYPICAL instance of this disease is described in a Jewish boy, aged 13. The attacks occurred every few days. Mailhouse thinks it probable that the condition has a chemical basis.

ERNEST JONES.

A CASE OF ACHONDROPLASIA IN A CHINESE. (Un cas (398) d'achondroplasie chez un Chinois.) MOLODENKOF, *Nouv. Icon. de la Salpêtrière*, Jan.-Feb. 1910, p. 43.

A HIGHLY typical instance of achondroplasia in a native of China apparently the first to be recorded. S. A. K. WILSON.

ACROMEGALO-INFANTILE GIGANTISM. (Étude du gigantisme (399) acromégalo-infantile.) BERTOLOTTI, *Nouv. Icon. de la Salpêtrière*, Jan.-Feb. 1910, p. 1.

BERTOLOTTI describes in detail the clinical features of a case of combined infantilism, gigantism, and acromegaly. The patient is 48 years of age, sexually and in secondary sexual characteristics infantile; his height is 1.89 m. (about 6 ft. 2 in.). The indications of acromegaly are the hypertrophy of the facial bones, in particular the inferior maxilla, the disproportionately large size of the hands and feet, and the shape of the head and thorax. The sella turcica is seen by radiography to be considerably enlarged. For various reasons given in the text the author considers his case one of gigantism arrested at about the age of seventeen, as the result of calcification of the hypophysis.

S. A. K. WILSON.

THE NERVOUS COMPLICATIONS OF GONORRHOEA. (Les complications nerveuses de la blennorrhagie.) BATUT, *Journ. des mal. cut. et syph.*, xx., 1909, p. 801.

AN important review, in which the writer, a surgeon at the Marseilles military hospital, gives the results of his own experience, in addition to an extensive survey of the literature. The nerves of special senses are very rarely affected in gonorrhœa. Only four cases of optic neuritis, including that of Barile (*v. Review*, 1908, p. 485) have been recorded. Auditory neuritis is rarer still, as only three cases, including those of Hébert and Martino (*v. Review*

1908, pp. 647 and 649), have been published. In sensori-motor neuritis due to gonorrhœa, not only the sciatic but other branches of the lumbar and sacral plexuses may be involved. Batut suggests that some cases of vaginismus may be due to neuritis of the internal pudic when the gonococcus is situated in the urethra or vagina. When gonorrhœal neuritis affects the lower limbs, the prognosis is not always favourable. The complication may be fatal, or leave residues in the form of muscular atrophy, tremors, or general weakness. Involvement of the spinal cord is extremely rare. Among the thousands of cases of gonorrhœa in the male which Batut has treated within the last thirty years, he has not seen a single case of myelitis or meningo-myelitis due to this cause. Affection of the cerebrum and its meninges is also very exceptional. Meningitis occurring in gonorrhœa may be independent of the gonococcus, and be due to other organisms, such as the meningococcus, pneumococcus, streptococcus, or micrococcus catarrhalis. Among the few cases in which meningitis was due to the gonococcus, Rombach's case is mentioned (*v. Review*, 1908, p. 598, and 1909, p. 78). Among neuroses attributed to gonorrhœa are classified meningismus, neurasthenia, and hysteria. Convulsive attacks, as a rule, only occur in the predisposed.

J. D. ROLLESTON.

ERYTHEMA NODOSUM IN RELATION TO VISCERAL TUBERCULOSIS, ESPECIALLY TUBERCULOUS MENINGITIS.
(401)

(De l'érythème noueux dans ses rapports avec la tuberculose viscérale, et en particulier la méningite tuberculeuse.) J. LAFITTE, *Thèses de Toulouse*, 1908-9, No. 828.

THIS thesis contains the histories of sixteen illustrative cases, one of which is original, in which erythema nodosum preceded or accompanied visceral tuberculosis. The tuberculous nature of the eruption is shown by the occasional discovery of tubercle bacilli within the nodules, as well as by the fact that injections of tuberculin in man have produced lesions presenting the anatomical characters of erythema nodosum. Lafitte concludes that the appearance of erythema nodosum will help to fix the ætiological diagnosis in ill-determined visceral affections, especially in meningitis in the adult.

J. D. ROLLESTON.

ON PUERPERAL AMAUROSIS. SIDNEY STEPHENSON and HER-
(402) RINGHAM, *Ophthalmoscope*, March 1910.

TWO cases of this form of temporary blindness without ophthalmoscopic changes are described. Albuminuria was present in

both, eclampsia in one only. The main portion of the paper is devoted to a critical examination of reported cases, and the author calls attention to certain characteristic features, namely, the existence in most cases of convulsions, the presence of headache, œdema of the eyelids, face, and other parts, and the presence of albumin, blood and tube-casts in the usually scanty urine. In his conclusions the author states that this condition may occur during pregnancy, parturition or the puerperium. No ophthalmoscopic changes are associated with it. It may rarely appear as a central scotoma or a hemianopia, and still more rarely as hemeralopia. Although often confused with "uræmic amaurosis," uræmia has not been shown to be the cause of puerperal amaurosis, which is usually associated with signs of toxæmia, and may be regarded as one of its rarer manifestations.

Recovery in a few days or even hours is usual.

Dr Herringham adds three analogous cases, and believes that the pathology of the amblyopia is the same as that of the eclampsia. Were the amblyopia dependent on a kidney condition it might be expected in other varieties of nephritis, but Dr Herringham has only seen it in connection with pregnancy.

A bibliography is appended.

H. M. TRAQUAIR.

A CASE OF CEREBRO-SPINAL RHINORRHOEA WITH DOUBLE (403) OPTIC ATROPHY. NORMAN H. PIKE, *Brit. Med. Journ.*, May 7, 1910, p. 1104.

THE writer records an interesting case of a woman, aged 22, who came to him complaining of constant dropping from the right nostril. Ten years previously she had a severe illness lasting for twelve months. The chief symptoms were—severe headache, vomiting, drowsiness, frequent convulsions with loss of consciousness, and stiffness at back of head. Early in the illness there was some pyrexia, which, however, did not continue. The eyes became prominent, and she became quite blind. She continued to have severe attacks of head pain and epileptiform seizures, occurring generally at night, and every three or four weeks. Examination revealed double post-neuritic optic atrophy. The nose was swollen externally at the tip. An œdematous polypoid tumour was seen between the septum and right middle turbinal—probably from soaking of tissues, as the fluid tended to collect there when the Killian position was assumed. Clear fluid dropped continuously from the right nostril, and amounted to 12 or 16 ozs. in the twenty-four hours. It had been in evidence for nine months, and, since the condition had started, the head pains were less severe, and there had been only one fit. At first the fluid had

the characters of nasal hydrorrhœa, but in later specimens the fluid was clear, watery and alkaline. The specific gravity was 1006. It contained no mucin, but a trace of globulin. Fehling's solution was reduced, but the fluid did not ferment yeast. Pyrocatechin crystals could not be obtained. On centrifuging a few leucocytes were obtained, and cultures showed cocci and bacilli derived from nasal sources.

The writer suggests that the "probable" cases recorded in St Clair Thomson's "The Cerebro-Spinal Fluid, its Spontaneous Escape from the Nose" (1899) would have been proved true cases of cerebro-spinal rhinorrhœa had the fluid been examined repeatedly so as to obtain the reduction by Fehling's solution. He points out how the first specimens of fluid in his own case gave no reduction, and how latterly, by persistent examination, the reducing substance was amply demonstrated, proving the intracranial source of the fluid.

W. F. BUIST.

ON MUOCOCELE OF THE NASAL SINUSES AND ITS COMPLICATION BY OPTIC NEURITIS. FULLERTON, *Brit. Med. Journ.*, April 16, 1910.

THREE cases are described. In the first a cyst occupied the ethmoidal region, extending backwards as far as the most posterior ethmoidal cell. Optic neuritis and exophthalmos were present. After operation rapid recovery ensued, suggesting interference with the vascular supply as the cause of the symptoms.

The anterior ethmoidal region, in the second case, was affected by a suppurating mucocele. The eye was in no way involved.

The third patient had a mucocele of the left frontal sinus extending to the anterior ethmoidal region. The left eye was proptosed and displaced outwards. The presence of optic neuritis is not mentioned. Recovery, with vision equal to 5/10 after correction, followed operative treatment.

H. M. TRAQUAIR.

OPTIC NEURITIS AND SUPPURATIVE OTITIS. BARR and (405) ROWAN, *Brit. Med. Journ.*, March 26, 1910, p. 737.

THIS paper embodies the results of examination of the eyes and ears in a second series of 60 cases of purulent middle-ear disease added to the author's first series of 100 cases previously published in the same journal.

The findings for each series and for both combined are given in tables. In the 160 cases 11 showed definite optic neuritis and 39 abnormal vascularity not attributable to the effects of age, occupation, eye strain or errors of refraction, conditions whose

importance is duly recognised by the authors. In 46 cases slight changes were observed which might have been due to such conditions, while in the remaining 64 both fundi were normal.

These statistics show that, when the fundus oculi is normal in purulent middle-ear disease, the prognosis as to recovery without operation is four times as good as when there is increased vascularity. Should improvement be observed in the eye condition the prognosis for the aural disease is much better than when the former remains stationary or becomes worse. A tendency was noted for the eye on the side of the diseased ear to show changes more frequently than the other eye.

The type of optic neuritis met with was mild.

The authors attribute the ocular conditions to serous meningitis causing increased pressure in the anterior cisterna. Slight pressure, combined with the presence of toxic substances in the fluid, may cause the changes in the optic nerves.

The authors plead for a systematic use of the ophthalmoscope in these cases, and advocate the consideration of the data so obtained in relation to the choice of conservative or operative treatment.

H. M. TRAQUAIR.

**NEW THEORY OF THE ORIGIN OF PAPILLITIS. (CHOKED
(406) DISC.)** WINDBIEL, *N.Y. Med. Journ.*, March 26, 1910,
p. 648.

THIS is an account of Schieck's theory, which is based on the examination of fresh cases of papillitis by serial sections. Enlargement of the perivascular lymph channels in the central strand was the chief histological feature. The explanation offered is that the lymph from the posterior part of the vitreous passes away along the central vessels, which soon leave the optic nerve and traverse the subarachnoid space. When the pressure in this space is increased lymph is prevented from escaping from the vitreous and remains in the axial strand, distending the perivascular spaces and ultimately infiltrating the nerve head. This distention of the lymph spaces compresses the blood-vessels, which later on exfoliate their intima, thus reducing their lumen still further.

H. M. TRAQUAIR.

**THE INEQUALITY OF THE PAPILLOEDEMA IN CERTAIN
(407) CASES OF INCREASED INTRACRANIAL PRESSURE.**
LEONARD LEY, *Brit. Med. Journ.*, April 16, 1910.

LEY suggests that papilloedema may be regarded as the converse of glaucomatous cupping, and that both conditions depend upon

the relation of the intraocular to the intracranial pressure. High intraocular pressure relative to the intracranial pressure bulges the optic papilla in the direction of lesser resistance, producing the glaucomatous cup, and similarly, when the balance of pressure is on the intracranial side, papilloedema is produced.

On this supposition unequal papilloedema would be due, not to an unequal distribution of the intracranial pressure, but to unequal intraocular pressure in the two eyes.

The author believes that his view is supported by the laws of hydrostatics. It cannot be said to be in accordance with clinical evidence or experience.

H. M. TRAQUAIR.

BILATERAL COMBINED PALSY OF THE SIXTH AND SEVENTH (408) PAIRS, OCCURRING SUCCESSIVELY, ETC. (*Paralysie associée bilatérale de la VI^e et de la VII^e paire, à évolution successive ou serpentineuse: hémispasme facial résiduel.*) RICARDONI, *Rev. neur.*, March 15, 1910, p. 265.

A YOUNG woman of 32. December 2, 1904, complete right facial paralysis. January 6, 1905, paralysis of the right external rectus. Improvement under treatment. January 30, 1905, complete left external rectus palsy. April 16, 1905, the other conditions having much improved, complete left facial paralysis. Recovery, except for slight residual left facial spasm. Diagnosis: ? polyneuritis of the bulbo-pontine groove.

S. A. K. WILSON.

PSYCHIATRY.

CIRCULAR AND ALTERNATING INSANITY. (*Zirkuläres und (409) alternierendes Irresein.*) F. MUGDAN (of Freiburg), *Ztsch. f. d. ges. Neurol. u. Psych.*, Bd. I., Ht. 2.

THE material used for this communication consisted in the case-records of the Freiburg psychiatric clinic during the period 1887 to 1909. Out of 950 affective psychoses only 94 showed a circular course, *i.e.* presented in one or more attacks the complete picture of mania at one time, of melancholia at another time. The author emphasizes the importance of heredity in this disorder. He divides the 94 cases into cases of alternating insanity, where each attack represents one clinical picture without admixture of elements of the opposite picture, and into cases of true circular insanity, where in each attack both manic and melancholic phases occur. His conclusions are: Alternating insanity is a psychosis with severe symptoms but good prognosis; circular insanity runs

a milder course, but the prognosis is more doubtful. These conclusions are based on the percentage of recoveries, the severity as estimated by the occurrence of hallucinations and delusions, and the number of individual attacks. Between alternating and circular insanity transition forms occur. The author considers that true circular insanity should be considered an independent psychosis, apart from simple and periodic mania and melancholia, but gives no adequate basis for this personal conviction.

C. MACFIE CAMPBELL.

THE GANSER SYMPTOM AND SYMPTOM-COMPLEX. TOWNSEND, (410) *Amer. Journ. of Insanity*, April 1910, p. 631.

FIVE cases are here shortly described. Three were cases of manic-depressive insanity; in two no diagnosis was made.

ERNEST JONES.

ACUTE ALCOHOLIC HALLUCINOSIS. GARVIN, *Amer. Journ. of Insanity*, April 1910, p. 599.

A GENERAL account of this condition, illustrated by several examples.

ERNEST JONES.

A REPORT OF THREE CASES OF KORSAKOW'S PSYCHOSIS. (412) C. E. STANLEY, *Amer. Journ. of Insanity*, April 1910, p. 613.

THREE typical cases of this condition are clearly described, and the diagnostic features pointed out. They were all due to alcoholism.

ERNEST JONES.

CONTRACTURES AND TENDINOUS RETRACTIONS IN CATATONIC DEMENTIA PRÆCOX. (413) TONIC DEMENTIA PRÆCOX. (Des contractures et rétractions tendineuses dans la démence précoce catatonique.) NOUËT and TREPSAT, *L'Encéphale*, Feb. 10, 1910, p. 131.

THE authors remark that the catatonic variety of dementia præcox is the sole mental disease in which they have found contractures, sometimes sufficiently severe and prolonged to be associated with amyotrophy. They are of cortical origin and determined by a particular mental condition. The cases used by the authors as illustrations show a condition of the hand and arm not dissimilar to what Dejerine has called the "main de fakir" of organic hemiplegia. They are consecutive to the maintenance of a stereotyped attitude for months.

S. A. K. WILSON.

GENERAL PARALYSIS TWO YEARS AFTER SYPHILITIC

(414) **INFECTION.** (*Paralysie générale deux ans après la contamination syphilitique.*) MARCHAND and PETIT, *Arch. de Neurol.*, 1910, p. 205. (Soc. de Psychiat.)

A WOMAN contracted syphilis at the age of 19, and had no treatment. Two years later mental troubles developed, followed by apoplectic attacks, disorders of speech, and transient hemiplegia, first on the left and then on the right side. The diagnosis of general paralysis was made, though the possibility of cerebral syphilis was considered. Specific treatment had no effect. The autopsy showed typical lesions of general paralysis without any signs of cerebral syphilis. In the subsequent discussion Roubinovitch stated that in fifty-two cases of general paralysis in which there was a history of syphilis, the shortest period after infection was nine years. In Ballet's experience the shortest period was six years and the longest thirty years (*cf. Review*, 1908, p. 267).

J. D. ROLLESTON.

A REVIEW OF THE RECENT STUDIES OF GENERAL PARESIS.

(415) T. U. MAY, *Amer. Journ. of Insanity*, April 1910, p. 543.

A SHORT account of Alzheimer's, Wassermann's, and Noguchi's work.

ERNEST JONES.

THE PATHOLOGY OF GENERAL PARALYSIS. ERNEST JONES,

(416) *Alienist and Neurologist*, Nov. 1909, p. 577.

A GENERAL review of this subject, pointing out how all the recent work confirm the view that the disease is invariably due to syphilis.

AUTHOR'S ABSTRACT.

THE CARE AND TRAINING OF THE FEEBLE-MINDED.

(417) ARCHIBALD R. DOUGLAS, *Journ. Ment. Sc.*, April, 1910, p. 253.

Short Historical Sketch.—The pioneer work of Itard, of the Bicêtre, followed by workers in other European countries and America.

The primary object of the first workers in the cause of the imbecile was education, in order to fit them for the duties and responsibilities of life, but as time went on it was discovered that by far the greater majority, no matter how highly educated

or well-trained, were unable to take their places in the outside world, unless under the supervision of relatives or friends, and very few indeed became useful members of society.

At the present day, it is the care and protection of the feeble-minded which ought to be our premature consideration; without this, attempts at education are little better than waste of time. Custody provides them with the proper hygienic surroundings, and these are only to be found in our public institutions. A large percentage of the mentally defective possess but a feeble physique, their faulty organisation is easily thrown out of gear, and when this occurs, it is at once reflected in the mental state of the individual. Therefore, before the boy or girl can be expected to benefit from efforts made to educate them, it was absolutely necessary that they should be maintained in a condition of health as near the normal as their defective constitutions would permit, and with this object, constant and careful medical supervision is of the utmost importance.

Isolation is characteristic of the imbecile, and is brought about by his inability to partake in the ordinary daily routine of persons of normal intellect. The remedy for this is the removal of the individual to the society of his equals, which provides those who are not quite impervious to impressions with the healthy stimulus of rivalry existing among the members of a community more or less equal in mental ability.

Education.—The first course to be pursued is a system having for its object the cultivation of the senses, the perfecting of co-ordination in movement, and the establishment of the normal relation between the brain and the hand. To secure this end, exercises are useful; the "bean bag" and simple musical drills are examples. For others who possess superfluous and misdirected nervous energy, as shown by irregular and involuntary movements, the use of the "peg board" or kindergarten "picture perforating" is beneficial, whilst the stereognostic sense is developed and strengthened by the employment of the "size" and "form" boards.

Taste and smell are not as a rule deficient, and are tested by interrogating the patient on substances similar in appearance, but differing in taste and colour. Deafness may exist as part of developmental failure or from mere inattentiveness; attempts should be made to deal with the latter by the aid of musical sounds varying in tone and pitch. Defects in speech when profound or dependent on certain causes are seldom eradicated, and special speaking lessons often benefit those in whom this defect is slightly marked. These form an introduction to the more serious problems of learning to read and write, but many patients are of course never able to get so far. Reading and writing are best

approached at first by means of the "word method" and the "letter box." Arithmetic is a difficult matter to the feeble-minded. Many special aids are employed, the "shop lesson" being most valuable in conveying simple methods of counting, value of money, etc.

Manual Training.—Perhaps first in importance comes carpentry. In this, the patients begin by making ordinary boxes, ascending by gradual stages to more ambitious efforts. Wood-carving is well adapted for certain cases. Shoemaking, basket-making, tailoring, and bookbinding also occupy an important position on the list of crafts attainable by the feeble-minded. For low-grade cases, all that can be done is to provide them with comfortable surroundings, unlimited fresh air, and medical supervision.

Conclusion.—A short consideration of the ætiological factors in operation. Many people regard the existence of insanity, epilepsy, alcoholism, etc. in the family as a stigma and disgrace; they deliberately lie in order to conceal it, and it is very difficult in some cases to obtain correct family histories. Yet, in instances where these can be obtained, the effect of hereditary predisposition is most marked. Indeed, without going further than seeing and conversing with many of the parents and relatives of these children, the source of the defect cannot escape notice—it literally stares one in the face.

At present, nothing is being done for future generations. Segregation for life of those bearing the obvious stigmata of defectiveness will do something to limit the number of these children in future, and restriction of marriage to those of healthy inheritance would quickly do away with its occurrence, but before any practical measures can be employed, public opinion must advance greatly.

AUTHOR'S ABSTRACT.

TREATMENT.

ANTIMENINGOCOCCIC SEROTHERAPY. (*La sérothérapie anti-(418) méningococcique.*) C. DOPTER, *Ann. de l'Institut Pasteur*, xxiv., 1910, p. 96.

DURING the 1909 epidemic of cerebro-spinal meningitis, 402 cases in different parts of France were treated with Dopter's serum prepared at the Institut Pasteur. Of these 66 died—a mortality of 16·44 per cent. On subtraction of 17 cases in whom the injection was made *in extremis*, and of 2 in whom death was due to other causes than meningitis, this figure is reduced to 12·27 per cent. The earlier the treatment was started the better were the

results. Thus the mortality among cases injected before the third day of disease was 8·20 per cent., of those injected between the third and seventh days 14·4 per cent., and of those first injected after the end of the first week 24·1 per cent. The mortality was highest in patients less than one year old, in whom it was 48·6 per cent., and progressively diminished in subsequent years, until it reached its minimum towards the age of ten years, when it was 10·2 per cent. Similar figures are given by Netter and Flexner (*v. Review*, 1909, p. 743, and 1910, p. 41). Among 359 cases in which details as to the employment of the serum were available, Dopter found that in 282 cases to whom it had been given in sufficient amount, the mortality was 8·15 per cent., as compared with a mortality of 27·2 per cent. among 77 cases who had received inadequate doses.

J. D. ROLLESTON.

BRAIN PUNCTURE. POLLACK, *D. med. Woch.*, No. 20, 1910.
(419)

POLLACK, in an interesting article on the above subject, deals with it mainly from its clinical aspect, and urges that the procedure is both a great aid to diagnosis and is also in many cases curative.

The cases in which brain puncture is practised are divided roughly into two classes—(a) where the puncture is made into a firm substance (tumours, etc.); (b) where the puncture is made into a more or less fluid substance (cyst fluid—old blood clot, etc.). While limiting his article to the discussion of some of the latter class of cases, he draws attention to the fact that the procedure is of considerable diagnostic value in the cases of the former class; while its diagnostic and therapeutic value in the case of brain cysts has been proved for some time.

Attention is drawn to the difficulty which often arises in the diagnosis between hydrocephalus and brain tumour, presenting, as they do, many similar symptoms. Apart from the puncture findings and the alterations in shape of the head, the occurrence of marked “remissions” in the progress of the case is said to be strongly indicative of hydrocephalus. By use of the puncture a diagnosis of hydrocephalus may readily be made if fluid under pressure is found on introducing the needle to a comparatively shallow depth (3-4 cm. measured from the skin). In a typical case the fluid will shoot forcibly into the syringe on being aspirated, and on removing the syringe will continue to flow from the needle for some time. In marked cases of hydrocephalus there is no difficulty in finding the fluid, no matter where the needle is inserted; but when in doubt as to diagnosis Kocher's site of puncture (2 to 3 cm. to one side of the Bregma) may be used. If the hydrocephalus is thought to be secondary to a tumour pressing

on the aquæduct or vena magna, a second puncture should be made into the posterior fossa, for if fluid is found in bulk there it contra-indicates the presence of a tumour. In the same way, if the diagnosis between a frontal and cerebellar tumour is uncertain, the existence of a hydrocephalus discovered by puncture through the cerebrum is a distinct indication in favour of a tumour in the latter site. Again, if a puncture in a case of this class be made over a suspected frontal site, the withdrawal of a shred of normal brain substance into the syringe is of obvious aid to diagnosis.

Brain puncture is of special therapeutic value in the acute or subacute hydrocephalus of adults, many of whom present the symptoms of migraine, but who, when untreated, rapidly get worse and die. The method is so devoid of risk that it is not necessary or always advisable to wait for the classical symptoms of hydrocephalus to assert themselves.

The majority of cases of localised meningitis seen by the author have been those in which the condition was secondary to disease of the middle ear. Here, too, the author argues that there is scope for the use of brain puncture, for by its adoption it may be definitely settled whether the exudate is merely serous, or whether there is actual pus formation, and this knowledge is of distinct value to the surgeon. If the fluid withdrawn is merely serous its withdrawal may be curative. Against the suggested risk of secondary infection after tapping an abscess of this class, it is argued that the risk is not nearly so great as is incurred when an open operation is performed. In order to reach an abscess or localised meningitis connected with middle-ear disease the puncture is made close above the attachment of the ear.

As regards the treatment of cysts by puncture, it is found that meningeal cysts are usually cured after being tapped, but that superficial brain cysts require in the majority of cases to be treated by operative measures. On the subject of cysts Neisser's opinion is quoted as follows: "If after the puncture of an apparently pure cyst no cure follows, or the second aspiration is not followed by so marked improvement as the first, it is probable that a tumour underlies the cyst."

The diagnosis of intra- and extra-dural hæmorrhage may be cleared up by use of the puncture, and the author quotes two cases of the latter type in which it was followed by absolute cure. This absolute cure is, he adds, only to be looked for in cases where, from the absence of progressive pressure symptoms, it is evident that the active hæmorrhage has ceased. In both the two cases quoted the fluid withdrawn was serous, indicating that clotting had already taken place.

For the general technique of the procedure the reader is referred to an earlier article by the same author. A smooth,

rapidly revolving drill is to be preferred to a hand-drill as being safer and easier to work with, and it is unnecessary to incise the skin with a knife, as nothing is gained and the risk of infection is thereby increased. The author lodges a strong protest against the use of larger bored needles than those originally devised by himself, as being more destructive to the brain substance and more likely to injure vessels. With his own fine needles he has never had trouble from injury to vessels. Healthy vessels seem to be much less liable to injury in this way than those which closely overlie a tumour and which may have been forced out of their normal position.

DENIS COTTERILL.

SOME INDICATIONS FOR RADICAL AND PALLIATIVE TRE-

(420) PHINING IN BRAIN TUMOUR. (Über einige Indikationen zur radikalen und palliativen Trepanation bei Gehirnschwülsten. BYSCHOWSKI, *D. Ztschr. f. Nervenheilk.*, Bd. 39, 1910, S. 141.

THIS is a lecture in which are discussed the indications for palliative decompression and for radical extirpation in cases of intra-cranial tumour. A number of illustrative cases are described. In cases with well-marked focal symptoms, but when symptoms of general intra-cranial pressure are slight or absent, we should not wait for general symptoms, but operate early, with a good prospect of removing the growth. If we wait until general symptoms have supervened, the chances of successful removal are diminished. Statistics of cerebral operations must not be too implicitly relied on in estimating the chances of any particular case, since each individual patient is a special problem which must be considered on its own merits. Frequent and repeated courses of antisyphilitic treatment, which are so commonly pursued in cases of intra-cranial tumour, often have a directly deleterious effect, causing us to lose valuable time, and ultimately lowering the patient's resistance in the event of a subsequent operation.

Pseudo-tumor cerebri, whether due to circumscribed serous meningitis or to acute cerebral oedema, is benefited by operation, just as in cases of true neoplasm, and in such cases of pseudo-tumor, optic neuritis may go on to atrophy, which, however, can be prevented by a decompressive operation. Therefore, even in the absence of focal symptoms, the presence of optic neuritis calls urgently for operation. We can then wait for the development of focal symptoms with the knowledge that vision has been already preserved. The ideal operation, of course, is a radical removal of the growth, but in many cases this is impossible.

PURVES STEWART.

SUTURE OF THE RECURRENT LARYNGEAL NERVE. J.
(421) SHELTON HORSLEY, *Annals of Surgery*, April 1910.

THE writer records one case in which, as the result of a bullet wound, the left recurrent laryngeal nerve was injured, with resultant complete paralysis of the left vocal cord. At the operation the injured portion of the nerve was found embedded in fibrous tissue just below the larynx. About one-third of an inch of nerve was excised and the ends sutured with fine chromic catgut. Examined fifteen months after the operation the patient was found to have regained completely the movements of the left vocal cord. This appears to be the first case of suture of the recurrent laryngeal nerve in the human subject on record, although several successful experiments on lower animals have formerly been reported.

D. P. D. WILKIE.

THE OPERATIVE TREATMENT OF CONGENITAL SPASTIC
(422) **PARALYSIS (LITTLE'S DISEASE) BY RESECTION OF**
POSTERIOR NERVE ROOTS (FOERSTER'S OPERATION.)
(Beitrag zur operativen Behandlung der angeborenen Gliederstarre (Littlesche Krankheit) mittels Resektion hinterer Rückenmarkswurzeln (Foerstersche Operation).) J. HEVESI,
Deut. Med. Woch., May 12, 1910.

IN cases of Little's disease the chief factor which impedes treatment by exercises is the spasticity of the muscles. Were this factor reduced or removed considerable improvement might reasonably be anticipated in many cases. The writer records the case of a girl aged 11 years who suffered from this disease, who presented great spasticity and contractures of the lower limbs, and who was quite unable to walk, in whom he performed Foerster's operation with an eminently satisfactory result.

The spinal canal was opened by laminectomy from the eleventh dorsal to the third sacral vertebræ, the dura mater was opened, and portions, of from 2-6 cm. in length, were resected from the second, third and fifth lumbar and the second sacral posterior nerve roots on the left side, and from the second and fourth lumbar and the first sacral posterior roots on the right side.

The spasticity and increased reflexes in the lower limbs disappeared, and within a few months the child was able to walk about the room. It was noteworthy that the Babinski sign remained after the spasticity had disappeared.

D. P. D. WILKIE.

Reviews

**REPORTS FROM THE PATHOLOGICAL LABORATORY OF THE
LUNACY DEPARTMENT, NEW SOUTH WALES GOVERN-
MENT.** Vol. ii., Part I. Sydney: Gullick, 1910. 4s. 6d.

THE first paper in this volume, by J. Froude Flashman and Oliver Latham, on the Pathology of General Paralysis, with special reference to the action of diphtheroid organisms, was read before the neurological section of the Australasian Medical Congress in 1908, and has already been abstracted in this *Review* (1909, p. 733). The second article, by Flashman and Graham Butler, on the Wassermann Reaction, contains a vast amount of careful research. The cases of general paralysis investigated are divided into three classes: (a) Those diagnosed clinically as general paralysis, and which gave a positive reaction with the cerebro-spinal fluid (35 cases). (b) A single case diagnosed by experts on clinical grounds as general paralysis in which the reaction was negative. (c) Cases which were at first diagnosed clinically as general paralysis, but gave a negative reaction, and on closer examination were found to be suffering from other diseases, *e.g.* paranoia.

In 8 control cases in which the patients were suffering from other mental diseases than general paralysis—*e.g.* dementia præcox, mania, imbecility, and epilepsy the reaction was negative. Out of 34 cases of undoubted syphilis in various stages, only 1 gave a doubtful reaction; all the rest were absolutely positive. The writers are of opinion that in secondary or in active tertiary untreated syphilis the value of the reaction is almost equal to that of Widal's test in typhoid fever, and that as regards general paralysis, in a case where cerebro-spinal fluid and serum have been carefully and repeatedly examined with negative results, the diagnosis must be seriously questioned. A bibliography of seventy-three references is appended. The volume also contains a note on the Cerebro-spinal Fluid in General Paralysis, by T. Parkinson, who failed to find organisms in the fluid either in fresh or stained films; a Demonstration in Freezing Methods, by Oliver Latham; papers on Cervico-brachial Neuritis, by C. A. Hogg, and on Asylum Dysentery, by G. Prior; and three articles by Flashman on the nervous system of *Dasyurus Viverrinus*. J. D. ROLLESTON.

LEHRBUCH DER SPEZIELLEN PSYCHIATRIE FÜR STUDIERENDE UND ÄRZTE. Prof. Dr ALEXANDER PILCZ. Zweite, verbesserte Auflage. Leipzig u. Wien : Franz Deuticke, 1909. Pp. 294. Mk. 6.80.

IN this second edition of his text-book Pilcz has introduced three additional chapters, dealing respectively with Pseudologia Phantastica, Constitutional "Neurasthenia," and Transitory Disorders of Consciousness of short duration. Apart from these three chapters, in which he deals in a most summary fashion with the topics mentioned, and from numerous minor alterations and additions throughout the rest of the work, the book is little altered from its earlier form. The work has numerous admirable characteristics and equally serious defects. The various types of mental disorder referred to are described in an extremely clear and succinct manner, and the dimensions of the book are not sufficient to alarm the student. No general psychopathology is given nor any discussion of the basis of the classification adopted by the author; the result is a systematic presentation of a number of disorders symptomatologically well characterised without any discussion of the really vital issues underlying the study of these disorders. While the result furnishes a well-rounded system, it is a most inadequate help to the student who aims at going beneath the surface and at studying the actual mechanisms at work in the concrete cases which he meets in his practice.

Mania is described along with melancholia and amentia (Meynert) under the acute functional disorders, while periodic mania is described under the chronic functional disorders along with circular insanity, periodic melancholia, the so-called "periodic amentia" and "periodic paranoia," periodic delirious conditions, menstrual insanity, dipsomania. The differential points, however, which would warrant such a separation are quite inadequate for the purpose; acuteness of onset, the absence of any disorder of menstruation, and the rise of body weight during the manic phase would, according to the author, point to a periodic mania rather than to a simple mania. Melancholia is a disorder with a favourable prognosis; some cases, however, end in secondary dementia, which may be so profound that the patients lead merely a vegetative existence. The author would lead the student to assume that such cases at the beginning have presented the same type of development as the cases which terminate favourably. We find that the symptomatology, as he describes it, is extremely wide, and that the group even includes clinical pictures which are similar to that of hallucinatory confusion (amentia of Meynert). It is not to be wondered at that the course of the disorders in this very

heterogeneous group should not be uniform. The validity of the establishment of the group itself as a nosological entity and of the other symptomatological groups is not discussed by the author.

These examples may suffice to show the limits of the value of the book. As a short text-book to describe the types of disorders recognised by a certain school the book is excellent; but it can hardly furnish the student with the leading principles which are of still more value than a series of formal descriptions.

C. MACFIE CAMPBELL.

BOOKS AND PAMPHLETS RECEIVED.

Kauffmann. "Beiträge zur Pathologie des Stoffwechsels bei Psychosen. Dritter Teil: Funktionelle Psychosen." Jena: G. Fischer, 1910. M. 7.

Flexner and Lewis. "Experimental Epidemic Poliomyelitis in Monkeys. Seventh Note. Active Immunisation and Passive Serum Protection" (*Journ. Amer. Med. Assoc.*, No. 22).

Delamarre et Pierre Merle. "Granulations épendymaires à corps amyloïdes (corps de Purkinje)." Paris: Imprimerie de Vaugirard, 1910.

Delamarre et Pierre Merle. "Modifications Épendymaires consecutives à des lésions de voisinage et à des lésions éloignées." Paris: Imprimerie de Vaugirard, 1910.

Delamarre et Pierre Merle. "Étude sur les épendymites cérébrales chroniques." Paris: Masson et Cie, 1909.

Mackenzie Wallis and Edwin Goodall. "Electric Bath Treatment in 108 Cases of Mental Disorder, controlled by Warm Baths in 16 Cases" (*Journ. Ment. Sc.*, April 1910).

Boveri. "De la névrite hypertrophique familiale (Type Pierre Marie)" (*Semaine méd.*, mars 30, 1910).

Vernon Briggs. "Restraint Instead of Treatment" (*Boston Med. and Surg. Journ.*, March 17, 1910).

W. Cramer. "Darstellung und Eigenschaften der für das Nervengewebe charakteristischen Lipoiden." Berlin: Urban & Schwarzenberg, 1910.

Voss. "Wichtige Entscheidungen auf dem Gebiete der gerichtlichen Psychiatrie." Neunte Folge. Halle: Marhold, 1910. M. 1.

Review of Neurology and Psychiatry

Original Articles

DENTAL IRRITATION AS A CAUSE OF MENTAL ABERRATION AND DEFECT IN CHILDHOOD.

By HENRY S. UPSON, M.D.,

Member of the American Neurological Association ; Professor of Neurology
in the Western Reserve Medical School, and Attending Neurologist to
the Lakeside Hospital, Cleveland, Ohio.

(With One Plate.)

IN June 1909 a little girl of 9 years, Ella K., was brought to me, with the statement that she had been unable to make any progress in school. This proved to be literally true, as she had not succeeded in learning her letters, or, in fact, anything else. She was restless and entirely inattentive, and was sent home after repeated trials. Histories of this kind are only too common, and inquiry revealed the fact that she could be taught nothing at home in household work, that she disregarded the rights of the other children, and was so obviously deranged that they called her crazy and refused to play with her ; at times she has eaten dirt, and has been in the habit of stuffing pebbles and sticks into the vulva.

In appearance the child was very small for her age, with a small but well-shaped head. She was fairly tractable, her move-

ments were quick, and she seemed under constant tension, as do so many defectives, always doing something, but nothing to any purpose.

Mental disorders in childhood have usually been classed together under the general term imbecility, in spite of diversity of detail as great as obtains among the aberrations of adolescence and later life. That diagnosis in this case was obvious. There were no symptoms of gross brain disease, no indication of thyroid lack, and no Mongolian or other stigmata, aside from a moderately high-arched palate. Adenoids had been removed a year before; examination of the eyes showed a slight and negligible error of refraction. Nothing in the history pointed to any cause of the mental defect. The teeth had appeared late, as is common in such cases.

In the course of an inquiry into the irritative causes of dementia præcox, I have found the cure of serious dental disease to be followed by recovery of mental health in a large proportion of cases. The motor and mental symptoms of imbecility run closely parallel with those of dementia præcox, if due allowance is made for differences in age and the degree to which the faculties have been developed, and it was, therefore, thought worth while in this little defective to investigate the dental conditions, and relieve any serious irritations that might be found. The child was suffering from no pain in the teeth or elsewhere. Skiagraphs were taken, and showed a crowded condition of the permanent teeth in the upper jaw on both sides. The right side is shown in Fig. 1.¹ The upper cuspid tooth appears immediately above the first bicuspid, and this, again, above the temporary first molar. The condition on the left side was practically the same.

Whether such impactions are capable of causing phenomena of psychomotor restlessness and profoundly defective mentality, in the absence of pain, is only to be determined by removal of the lesions and observation of the subsequent course of events.

Early in July 1909 the temporary first molars and permanent first bicuspid teeth were extracted to make room for the impacted cuspids. A few weeks after the operation the mother reported that the child was quieter, and seemed to take a little more

¹ The skiagraphic work of this investigation was kindly done for me by Dr Geo. F. Thomas.

intelligent interest in the things about her. This improvement persisted during the summer, and in September the little girl was sent to school. After two or three weeks of school discipline in a class of thirty or forty pupils she was sent home in a complete relapse, as unmanageable and unintelligent as ever. Nothing more was heard of the case until February 1910, when, on telephoning the mother, I was surprised to learn that the child was once more in school, that she had learned to spell simple words, to add the simplest sums, and, in fact, had made a promising beginning of school life. Her relapse had proved to be short, yielding to about two weeks of rest at home. Improvement since then has been progressive, and she has had no recurrence of her symptoms except a peculiar stiff way of walking, with feet and knees strongly adducted, which has always come on at the beginning of her nervous spells, and which became very noticeable in March 1910, without, however, the impulsive and degraded acts which had formerly accompanied it. A markedly hooded clitoris was operated on and thoroughly freed under ether on March 24th. Within a few days the gait became normal, and improvement in intelligence and self-control became more rapid.

The discovery of multiple impactions in this case seemed to furnish a reasonable clue to the symptoms, both of aberration and of defect, and the results that followed operation suggested the advisability of further observations. Accordingly three imbeciles were selected, two of them from the patients of the Dispensary of the Lakeside Hospital, and one occurring in private practice. Epileptics, cases of obvious gross brain disease, and cretins were excluded. In the two dispensary cases the diagnosis of imbecility had been made by the dispensary physicians; in fact, it was obvious to the casual observer, and the patients had been sent home with a recommendation to educate them if possible, but to attempt no medical or surgical treatment.

These cases follow :—

Patient number 2 was an attractive-looking but delicate boy of 9. He was a seven months' child, was fragile at birth, and ever since has been hard to manage, irritable, and a good deal of a fighter among the other children. He does things well with his hands, but has made no progress at school, and has

never been able to master the intricacies of language either in speaking or understanding. He answered the simplest questions in a hesitating fashion and with some difficulty. On examination by skiagraph the right upper second bicuspid tooth was found to be impacted against the first bicuspid at a right angle, and the left upper first bicuspid tooth almost as much angled against the cuspid (Fig. 2). In addition the lower second molars were angled against the first molars sufficiently to threaten impaction, if not actually to constitute it. The impacted bicuspid tooth was extracted on the right side, but by mistake the second bicuspid was extracted on the left. This, however, gave room for the impacted first bicuspid to swing into place, and it has since erupted normally. No extractions were made at that time in the molar region. One of the earliest signs of improvement in this case was marked diminution of the irritability which the patient manifested in the home as well as among his playmates. This was followed by freer speech and an increase of ability to understand. An intercurrent attack of typhoid a few months after the operation did not determine a mental relapse, and the boy has since then continued his mental improvement. In March 1910 the badly decayed lower temporary molars were extracted to allow the first permanent molars to spring forward and give more room to the second molars.

The third patient, a little girl of 12, has six brothers and sisters from two to eighteen years old, all of them well. She is strongly built and looks robust, except for a somewhat pasty colour, possibly due to drinking too much tea, which she does in common with the rest of the family. She was normal at birth and until she was two years old. Her mother says that she then became very nervous and timid, and ever since has been below par mentally. Repeated efforts have been made at instruction in school without result. She has shown no interest in anything at home, has been unable to learn to do any of the work about the house, has not cared to play with the other children, has been, in fact, in a condition of apathetic imbecility, insensitive to pain, but of heightened emotional apprehension. Her special fear is of cats and dogs, her terror of them amounting to a genuine phobia. On examination, although her vitality was sluggish, the little patient had no organic disease or stigmata, except for an absence of the upper and lower cuspid

teeth on the left side. Skiagraphic examination showed the left lower cuspid tooth impacted against the lateral incisor at a right angle, the contact being at the end of the root of the incisor tooth (Fig. 3). The left upper cuspid was impacted against the lateral incisor at a low angle, and the left lower third molar was directed toward the second molar at a right angle, but not yet in contact. Early in November 1909 the left lower cuspid and left lower third molar were extracted, and the left upper first bicuspid was removed to give the cuspid room to come down. Within a few weeks the little patient's condition began to improve. Severe headaches, which she had had once or twice a week for many years, ceased immediately after the operation and have not since recurred. Soon the little patient showed more interest in the activities of the home, and began to play with the other children. She was later taught to set the table and wash the dishes, and began to talk more freely and answer questions more intelligently. This improvement has been progressive and still continues.

The fourth patient, a boy 8 years of age, presented aberrations differing a good deal from those of the preceding cases. He was the last of four children, all the others being healthy. He is a sturdy-looking little fellow of good colour, quiet in demeanour, and looks fairly intelligent in spite of an open mouth due to adenoids. He was a good, healthy, bright boy until about two years ago. Then he began to have a mania for matches. One day he set fire to a heap of straw in the barn. At another time he started a fire in a closet and one in the attic. After he had shown these tendencies for about a year, in spite of punishment, his mother one day struck matches and held them to his legs so as to scorch him, since which his interest in matches has been no more. Immediately following this episode, however, he began to steal money from his mother and from visitors, which he usually spent for candy. On several occasions later he took his father's horse and carriage, without permission, drove the horse at breakneck speed, and was either found or returned home after tying the horse and leaving him. During ten or fifteen days before he was first seen he had stolen knives and boxes of tacks from a store, and taken money from the homes of neighbours. Moral suasion and punishment had been freely tried in vain. Whipping had no curative effect whatever. Pleading

brought tears and penitence, but no reform. The patient began school last year, but failed to pass at the end of the year. He was good in drawing, mathematics and music, but very poor in spelling and reading.

Although the little patient seemed nervously weak, so that his teacher found it necessary to allow him to lie down and rest occasionally, he showed no physical defect except by skiagraphic examination of the teeth. Both upper cuspid teeth were impacted against the lateral incisors (Fig. 4), and the left lower first molar tooth had a very large filling, in fact, was a mere shell. The upper first bicuspid teeth and left lower first molar were extracted September 27, 1909. The molar tooth proved to have an abscess at the end of the root. The bicuspid teeth were extracted so as to allow the cuspid teeth to swing into their proper position.

Following the operation the little patient made a rapid improvement, has had practically no further trouble, and was sent back to school, where during the winter he has made an excellent record in scholarship and deportment.

The improvement which has followed operation in these cases, striking as it is, has in none of them, except possibly the last, amounted to a complete sweeping away of the evidences of mental defect. The most radical change has been in the cessation of such symptoms as headache, restlessness, irritability, impulsiveness and undue fear, in fact, the signs that characterize imbecility, in common with the other psychoses as an active process of disease. There has been in addition a definite gain of mental power which has gone on about as might be expected after removal of a long-continued drain on the vitality of the childish nervous mechanism, that is, promptly and with considerable speed. The cases constitute hardly more than a preliminary skirmish in the difficult field of mental defect in childhood, lacking as they do such precise observations on the degree of mental impairment as are possible in a psychological laboratory. The improvement, however, has been so definite and progressive in each case as to come into clear relief without such tests. I am unable to account for the improvement following operation in these cases, except by supposing it due to the removal of a specific cause of the disorder.

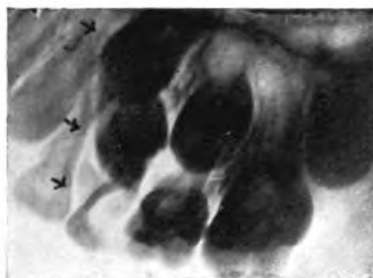


FIG. 1.



FIG. 2.



FIG. 3.



FIG. 4.

To illustrate Paper by Dr Upson.

**CONSTITUTIONAL FACTORS IN THE DEMENTIA
PRÆCOX GROUP.¹**

By Dr AUGUST HOCH,
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AMONG the present problems of psychiatry the study of dementia præcox is perhaps that which excites the most general interest. It is more particularly the fundamental nature of the disorder which is discussed, and in regard to which the views diverge. The claim is often made that we have in dementia præcox an organic brain disease similar to general paralysis or the other typically organic disorder. There is no doubt that we find in the central nervous system in cases of this group structural changes; some of them are evidently not related to the disorder, while there are others which probably form a part of the process, although we do not yet clearly understand under what conditions they are found nor what their real significance is. While these findings, upon which rests the claim that dementia præcox is an organic disorder in the same sense as is general paralysis, cannot be neglected, and represent a most important field for research, there is another set of data furnished by an analysis of the constitutional factors in these cases, of the development of the symptoms, their nature, and their relationship among each other—data which would seem to show that, granted all the findings of an anatomical and perhaps chemical nature, dementia præcox is after all not a condition which can be placed side by side with the plainly organic diseases, such as general paralysis. Instead of going into a theoretical discussion as to the possibilities of relationship between functional and organic disorders, it would seem wisest, as an introduction to what I have to say regarding the constitutional abnormalities in dementia præcox, to put together the fundamental differences which seem to exist between the plainly organic disorders like general paralysis on the one hand, and the dementia præcox group on the other hand.

In the first place, the dementia in the plainly organic disorders is different from that of dementia præcox. In the

¹ Read at the meeting of the American Medico-Psychological Association, held in Washington in May 1910.

former we find that the dementia represents a diffuse disorder of activation of memories—and hence gives rise to a diffuse defect of elaboration, retention, memory, orientation, etc. In dementia præcox it shows itself essentially in the sphere of interest in the environment, and in a peculiar distortion of the train of thought. In the second place, in the organic disorders we find that the content¹ of the psychosis is of secondary importance, while in dementia præcox the content seems to stand in the very foreground of the clinical picture; the content is, moreover, apt to be peculiarly limited, so that in patients who are accessible to an analysis we find the existence of special trends which account for the entire content. This is something which these cases of dementia præcox have in common with disorders such as hysteria, certain simple paranoic states and some psychoses of degenerates, that is, conditions in which the psychogenic nature of the symptoms is now scarcely questioned by anyone. It is well to remember in this connection that the above-mentioned states, to which we shall again have to refer later, are not always easily differentiated from dementia præcox; probably this difficulty exists not merely owing to our inadequate diagnostic facilities, but also owing to the closer relationship which these conditions bear to the disease in question.

Finally, we find that dementia præcox presents yet another side which would point to a certain kinship with these psychogenic disorders. I mean the fact that the relationship between the personality, the special mental make-up of the individual and the psychosis, is a much closer one, the constitutional factors of much more determining importance in the development than in the organic disorders, where we often find either no appreciable peculiarity of mental make-up, or where, at any rate, we have no reason to think that the essential manifestations of the psychosis grow, as it were, out of the personality.

It is obvious, therefore, that there are quite a number of important considerations which show that whatever anatomical changes may be found, their relationship to the disorder is evidently not so simple as in those diseases which are clearly organic; and it is therefore necessary to insist that, in addition

¹ The term content is here used in the sense in which Jung has used it in his "Inhalt der Psychose" (Leipzig u. Wien: Franz Deuticke, 1908), and therefore contrasted to the formal disorders which have received more attention.

to a study of anatomical and chemical alterations, there is a vast field of inquiry at least as important and more accessible for the elucidation of the nature of the disorder, namely, the study of the personality and the study of the development and the content of the psychosis.

I wish to dwell in this communication upon the study of the make-up only, and more particularly on the type most frequently seen. It will be remembered that it was Adolf Meyer who, since 1903, has insisted that dementia præcox is a disorder which may not develop in anyone, but that *only some personalities* are in danger, and that in the development inadequate psycho-biological habits play an important part (1).

If we succeed in obtaining accurate anamneses from which we are able to form an opinion of the personality as it existed before the psychosis, or before the incubation period, as it is sometimes called, a certain type of personality recurs with striking frequency, that which I have called the "shut-in personality" (2) the significance of which I wish to discuss more particularly. We may start with a few examples.

One patient, a married woman of nineteen, is said to have been quick enough to learn, and to have studied much; she was also a frequent church-goer, especially since the age of sixteen, without, however, taking an active part in the church work. Even before the age of five she did not get on with other children, did not play with them, but was inclined to keep to herself. When people came to the house she left the room; she was described as always "helpless" in company. She was not liked in school, and never helped others. She was hard to influence—did not take advice. She was over-systematic; wanted things which belonged to her left alone. She was sensitive and cried when interfered with, and was apt not to get over the upset for days. She saw faults in others, rather than her own defects; thought she was better than her fellows, but did not assert herself. She never confided in anyone. She married when eighteen, and during her first pregnancy was uncommonly insistent in her desire to have a boy who should not have red hair, and when it was a girl with red hair she lost interest, and the psychosis at once developed.

The second patient is said, especially since the age of eight, subsequent to an attack of measles, to have grasped her studies less well than before, was always self-conscious, felt awkward in

company and was sensitive, but she said little about it, and in general talked very little. The mother says that the patient was in this respect much like her father, who was, however, a successful, active man. She often sat brooding, was uncommonly systematic and "finicky." At puberty the seclusiveness became more marked. At seventeen she went to a fortune-teller, who told her she would go insane, which prediction is said to have occupied her mind a good deal. At eighteen she fell in love, but her love was not reciprocated. Then she began to grow absent-minded and careless, and gradually drifted into a deterioration.

Case 3 represents a somewhat different type, yet still with well-marked traits pointing in the same direction. The patient, a woman of thirty-six, who always, even as a child, was sensitive and stubborn. She often left the table at the slightest provocation, was hard to guide and influence. It is remembered that she herself would say that she was as immovable as a post. She was married at twenty, did not find her husband congenial, had a tendency to romanticism, never adapted herself to her simple life, made demands upon her husband which she knew he could not meet. Her circumstances as well as her inclinations isolated her. She was moody. Repeatedly she got suspicious of her husband, she fell silently in love with a dentist, had fancies about him, and, for several years before the onset, refused to have any intercourse with her husband. She broke down only at thirty-six, and deteriorated.

These cases suffice to show that we find, in dementia præcox, persons who do not have a natural tendency to be open, and to get into contact with the environment, who are reticent, seclusive, who cannot adapt themselves to situations, who are hard to influence, often sensitive and stubborn, but the latter more in a passive than in an active way. They show little interest in what goes on, often do not participate in the pleasures, cares and pursuits of those about them; although often sensitive they do not let others know what their conflicts are; they do not unburden their minds, are shy, and have a tendency to live in a world of fancies. This is the shut-in personality.

As I have said, this type of make-up is very common in dementia præcox. In a study of my older material from the McLean Hospital, Waverly, Mass. (72 cases), I found that in

35 per cent. of the cases it was markedly pronounced, whereas in 16 per cent. it was indicated, so that there was some evidence of it in 51 per cent. When we consider that these findings refer to a time when we did not especially look for these traits, these figures are all the more striking. Other abnormalities of make-up were noted in 15 per cent.; the make-up was not described in 9 per cent., and in 23 per cent. the claim was made in the anamnesis that the patient's tendencies were "natural." In my more recent material of the Woman's department at Bloomingdale Hospital, N.Y., from which I excluded the cases in which the facts were not accessible—a small material, to be sure, amounting only to 38 cases—I found a typical shut-in personality in 49 per cent. of the cases, indication of it in further 19 per cent., making a total of 68 per cent. altogether. 24 per cent. of the cases are described as showing peculiarities of other types. It is interesting that among the cases who unquestionably deteriorated, the typical shut-in personality was most often seen, occurring in 66 per cent. On the other hand, in the cases who did not show definite deterioration, in other words, who either got well or, while presenting chronic symptoms did not lose their interest in the environment to any marked degree and whose train of thought did not get confused—a group including cases which form a transition to the simpler paranoic states—we found either indications of the shut-in personality or, still more frequently, other abnormalities of make-up, such as long-standing neurasthenoid states, shallowness of emotion, lack of consideration for the environment, or abnormal insistence on precision, a tendency to day-dreaming, evidence of a poorly-balanced sexual instinct; as in one case who for years had drifted into strikingly fruitless love-affairs, another who showed jealousy of the husband for years before the onset and ever since marriage. But I do not propose to go into this part of the topic, as it would lead me too far, and should form the theme of a more extended investigation. Finally, I found only 8 per cent. in which there seemed to be a normal make-up.

Zablocka (3), who studied the dementia præcox material of the Zürich clinic in regard to prognosis, found that the shut-in personality is seen more often in the deteriorating than in the other cases. In this connection it should be remembered that the group of dementia præcox in Zürich is very large, and

includes many mild cases which we would not regard as dementia præcox.

Of great interest is an excellent study which Dr Kirby (4) has recently reported at the New York Academy of Medicine, in which he took up about 100 cases of dementia præcox observed at the Psychiatric Institute, and found in over 50 per cent. a plainly shut-in personality, and only in a small percentage an apparently normal make-up.

These figures seem to me to tell the story plainly enough. That all cases should show clear indications of a shut-in personality is not to be expected. That as many as 68 per cent. presented evidence of it in my recent material, over 50 per cent. in that of Dr Kirby, over 50 per cent. in my older cases, and that comparatively few cases show a normal make-up—these are data which cannot be neglected.

The shut-in personality, after all, shows only the direction in which the dangerous traits lie, and it is fair to assume that other abnormalities which we cannot as yet clearly define may work in the same direction. The lack of contact with reality may be only partial, whereas the general response is fair; or other traits which seem to interfere with satisfactory contact, or which foster day-dreaming or which interfere with the formation of objective interests, may be of importance. Kirby has pointed out that a certain shallowness of interest without a general shutting-in was not rarely seen in those of his cases which did not show the typical make-up. Finally, we must not forget that behind a correct appearance, the result of a formal training, there may be much that is not apparent in ordinary life, but which at any time may under stress come to the surface. The fact that these same traits are not seen in manic-depressive insanity is certainly very interesting as a control. How much of it does occur in normal persons is difficult to estimate.

It may not be out of place here to say that in a question of the importance or the danger of certain traits, the whole bearing of which we do not yet know, it is difficult to estimate the limits of elasticity until sufficient strain has been exerted to test it.

We cannot help feeling that to a certain extent these characteristics must in themselves represent a reaction to something more fundamental, but evidently a reaction along a special bent

of the personality, and one which owing to its very nature has certain cumulative tendencies.

Freud has shown us that in the neuroses we are dealing primarily with a lack of adaptation to reality in the sexual sphere, with an inadequate or faulty development of the instinct in its wider meaning, in the sense that owing to a certain fixation and limitation of the interest in that sphere in childhood, and owing to subsequent repression, the later free application and adaptation is interfered with. This is not the place to enter into a discussion of this view which Freud has expressed in his earlier writings, and again very clearly in his recent Worcester lectures (5), and which Jung has extensively supported by his own studies. Important for us in this discussion is the fact that Jung has insisted that a similar sort of abnormality in the sphere of the sexual instinct exists in dementia præcox. While I have personally not analysed a sufficient material with the view of verifying this claim from direct evidence, I am nevertheless inclined to regard this as very probably a correct one, for the following reasons:—In the first place, we should mention the close relationship which exists between dementia præcox and puberty. Secondly, the fact that everyone who has attempted to enter into the lives and struggles of these patients must have been impressed with the frequency with which sexual conflicts are found to have played an important rôle in the development of the disorder. Thirdly, analysis of the content of the psychosis shows us again and again the existence of sexual trends, and often when the sexuality manifests itself, it does so in a peculiarly diffuse, poorly adapted manner, such as in the falling in love with several persons at the same time, and the like. All this cannot be accidental. There is, therefore, much that speaks in favour of the claim of a fundamental lack of sexual adaptability; but, according to those who have analysed the neuroses of various kinds, we find there similar difficulties, but without equally serious consequences.

We are scarcely prepared to say what is fundamentally the nature of the lack of sexual adaptability, and what is its relation to the shut-in personality. However, Abraham (6), who has fully recognised the importance of the shut-in personality, has attempted to answer this question. He regards the lack of sexual adaptability as due to an arrest of sexual development,

a permanent retention of the infantile autoerotic stage, and looks upon the shut-in tendency as one of the expressions of this autoerotism. This is certainly a clever hypothesis, but we cannot help feeling that the question is more complicated.

But even without knowing what is the origin or the fundamental meaning of the constitution we have described, we can see, nevertheless, reasons why such a constitution should represent a serious menace to the mental balance of the personality.

The inability to get into contact with the environment bears in itself many dangers: it prevents an active aggressive shaping of the situation which is so important for the progress of the normal individual and which forestalls further conflicts; it prevents the corrective influences which actual experience constantly furnishes, and which is gained in the mingling with people, the mutual actions and reactions; it fosters the growth of unproductive fancies. Everyone has a certain inclination to day-dreaming, but, aside from the fact that it plays a rather subsidiary rôle in the normal robust person, the fancies often represent in them the first dim outlines of future plans, and therefore are not without reference to reality, and receive their value from that side; but fancies which are out of contact with reality probably exert in themselves a certain fascination which progressively limits objective interest. Moreover, these very tendencies make the individual unfit to acquire those constructive plans and hopes, not necessarily elaborated, but felt, dimly appreciated, upon which the normal person lives, and which give to him the very essence of his existence. There is an absence of that progressive, prospective satisfaction which cannot be too much insisted upon as necessary for the retention of mental health. The active contact with the world makes, of course, more demands upon the individual than a life in pure fancies, towards which the path of least resistance evidently leads in these patients. We see, therefore, that the traits upon which we would lay most stress in the shut-in personality, the lack of contact with the environment, the satisfaction with fancies instead of objective interests, the lack of constructive aims and aggressiveness, must have dangers in them which it would be difficult to exclude as dynamic factors in the development of these disorders, and we must agree with Adolf Meyer when he has again and again insisted upon the importance of faulty psycho-biological habits in connection with dementia præcox.

It will now be of interest to briefly review some constitutional abnormalities in groups of cases which present a certain kinship to dementia præcox,—I mean in hysteria, certain paranoic states, and the psychoses of degenerates recently reported by Birnbaum, cases therefore in which, and this is the point I wish to emphasize more particularly, deterioration does not occur. In hysteria, in which disorder we have, as was above stated, according to Freud, also a certain lack of sexual adaptability, we find a very different sort of personality. Here there is no lack of aggressiveness, nor lack of contact with the environment, nor an absence of objective interest; on the contrary, we find a constant reference to the persons about, a desire to be in the centre of observation; hysterical patients force us with all means at their disposal to occupy ourselves with them.

In paranoic states, too, the contact with the environment is plain; these persons are sensitive, and markedly concerned about the rest of the world, they expect something from it, and with all their suspiciousness they are not without a certain open attitude in the sense of aggressiveness and a desire to seek contact. Another equally important difference between the paranoic state and the condition of dementia præcox is to be found in the fact that sometimes the external situation is a much more potent factor in the causal constellation of the former, as is seen in the paranoi, querulous, and other paranoic states, such as those reported by Gierlich (7) and Friedmann (8), or those more recently by Rüdin (9).

We may finally consider that interesting group of cases which lately has been taken up by Birnbaum (10), the first German who fully recognised the claims of the French school regarding the *délire des dégénérés*. It is interesting that these are psychoses which often resemble in their mechanisms those of dementia præcox, so much so that Bleuler (11), one of the investigators best acquainted with the psychology of dementia præcox, has met Birnbaum with the statement that the latter had not succeeded in giving a differentiation between his cases and dementia præcox. To this Birnbaum has given, what I consider a satisfactory reply¹: there is much that separates the two groups if one considers well-marked cases of either group, but it does not seem unlikely

¹ In *Centralblatt f. Nervenheilkunde und Psychiatric*, 1909, p. 429, although I cannot by any means agree with his entire position.

that transitions occur, although plainer transitions exist between these psychoses of degenerates and hysteria.

In the group which Birnbaum has described we find individuals with criminal tendencies who, under the influence of punishment, imprisonment, frustrated escapes, denials of pardon, announcement of a new indictment, etc., developed psychoses with delusions, hallucinations, and other symptoms in which the element of wish-fulfilment takes a very prominent and easily recognised place. The disorder then depended strikingly upon external difficulties and often disappeared with the removal of the latter. As to the make-up, these personalities, besides presenting criminal tendencies, are unstable, without much determination or depth of feeling, though with a tendency to outbursts of feelings; they are fickle, frivolous, unable to stick to any occupation, suggestible, imaginative, eccentric, given to fantastic schemes, untruthful. These patients, then, do not show a lack of contact with the environment, they even present a certain ill-directed aggressiveness. They are, therefore, in many ways different from individuals with a shut-in personality. In another point they differ, namely, in the fact that their conflicts are on the surface; they are in a scrape, to put it tersely, and the content of the psychosis is a reaction to the scrape. Hence the make-up as well as the situation differs from that of dementia præcox, although the mechanisms are, as we said, often not unlike those seen in dementia præcox.

This putting side by side of the constitutional traits of hysteria, paranoic states, and certain psychoses of degenerates on the one, and dementia præcox on the other hand; this contrast of a group of cases which show no tendency to deterioration with a group of cases in which deterioration is an important feature, seemed to me to be of value, because it can hardly be regarded as accidental that those who deteriorate show original defects in the direction which we have indicated, while those who do not deteriorate are singularly free from those very traits; nor is the prominence of external factors in paranoic states and in the degenerates, in contradistinction to the essentially internal conflicts in dementia præcox, likely to be accidental and without bearing on the question of the outcome.

Having then shown the prevalence of the shut-in personality in dementia præcox, and its absence in the non-deteriorating

cases, it is left for us to point out certain relationships between the traits we have brought out and the symptom pictures early and late.

In the first place, it is well known that the incubation period, if we may be allowed the term—a period that often lasts several years—is almost always marked by an accentuation of the shut-in traits, the patient gets further away from the environment. Secondly, we can scarcely help seeing the close relationship which exists between the constitutional traits and the negativism, and last, but not least, between these traits and the final deterioration. What is, after all, the deterioration in dementia præcox if not the expression of the constitutional tendencies in their extreme form, a shutting-out of the outside world, a deterioration of interests in the environment, a living in a world apart?

All these considerations will, I hope, make clear that the constitutional abnormalities which we have described, and which in their most marked form probably represent the direction in which the important traits lie, must be the expression of dynamic forces of great importance.

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**FRÖHLICH'S DYSTROPHIA ADIPOSEO-GENITALIS, WITH
NOTES ON A CASE IMPROVED BY THE ORAL
ADMINISTRATION OF PITUITARY EXTRACT.**

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IN recent years observations have been made on cases which show a condition of general adiposity, genital atrophy, and a series of trophic changes associated with pathological changes of the pituitary body or structures in its immediate neighbourhood. These cases have been variously entitled "cerebral adiposity," "hypophysis tumour of adiposo-genital type," etc.

Fröhlich first, and afterwards Berger, and also Zöllner, have described this type of syndrome; Madelung, too, has recorded the case of a girl who became generally adipose after being shot in the neighbourhood of the pituitary.

The condition known as "Fröhlich's Dystrophia" is sharply defined clinically.

In addition to general adiposity, the typical indications of pituitary tumours may be present. The adiposity is frequently pronounced in the breast and abdomen. The genital glands are atrophic. The normal exhibition of hair is lacking, especially on the face, in the axillæ, and over the pubis. The skin is dry, and the nails are brittle or fragile. It is stated by some that there is a striking persistence of the childish habitus, but this is only strictly true if the morbid process has begun before adult life is reached. If the disease begins after puberty, there is a tendency to the loss of the secondary sexual characteristics, which condition, however, is to be distinguished from that of true infantilism. In true infantilism these secondary sexual characteristics are never or only imperfectly developed.

As to the genesis of this peculiar syndrome, there has been

no general agreement. Since Cushing's work has been published sufficient time has not elapsed for pathologists to express their opinion on the subject.

Earlier Fröhlich had referred the symptoms to pituitary tumour, but Erdheim has since noted general adiposity in cases of tumours of the small brain; he found in such cases that the tumour had either grown out from the sella turcica to encroach on the base of the brain, or that it proceeded from the infundibulum, and was not one chiefly of the pituitary. From these cases Erdheim concludes that the symptoms are due to a damage to the base of the brain.

His hypothesis is so far plausible, as such damage can disturb one of the most essential metabolic processes and lead to glycosuria. Marbourg holds a somewhat similar view—that the adiposity is a symptom of a special kind of tumour in the pituitary or base of the brain of dermoid or cholesteatoma type.

Others think that the atrophy of the genital glands may be the primary damage, and they reason from the fact that during post-climacteric life and in eunuchism there is an associated obesity. It is also known that castrated animals easily become fat.

In classifying the causes of obesity, Von Noorden speaks of primary and secondary thyreogenous cases. It has been suggested that the obesity in cases of Fröhlich's dystrophia may be of the secondary thyreogenous type, for there is an admitted correlation between the pituitary and thyroid functions.

"Adipositas dolorosa" of Dercum stands in near relation to "Dystrophia Adiposo-genitalis." Dercum and M'Carthy have found in one such case an adeno-carcinoma of the pituitary. Launois and Cleret think there is an undoubted connection between the two conditions.

These various views suggest the intimate correlation of such ductless glands as the pituitary, thyroid and genital in the pathogeny of Fröhlich's dystrophia, and Cushing's most recent experiments would indicate that the primary damage is a functional deficiency of the anterior lobe of the pituitary body.

The following case of Fröhlich's dystrophia adiposo-genitalis is of special interest, because marked amelioration of the condition was effected by a prolonged administration of large doses of

an extract of the whole pituitary gland. In the literature of this subject I have been unable to find any reference to the results of such treatment, though some form of pituitary administration is doubtless on trial in many medical centres. Meantime there is every advantage in the publication of single cases in which this mode of treatment has been given an adequate trial.

J. J., male, unmarried, came under observation in 1908, when he was aged 37 years. On 17th October of that year he was admitted to Leith Hospital. He complained of "swelling of legs, frequency of micturition, and giddiness."

During the period 1893-1896 he contracted syphilis, gonorrhœa, and malaria, and had sunstroke when in India. He also states that he had a "shock" in 1903 and was paralysed on the left side of the body and face. Since then he has suffered from strabismus of the left eye. Early in 1907 he began to be troubled with great thirst and frequency of micturition. The amount of urine passed was excessive, and he had to get up eight or nine times during the night. He did not suffer from abnormal feelings of hunger. In January 1908 he complained of excessive thirst, polyuria, and increasing giddiness, and was admitted to the Royal Infirmary of Edinburgh. When in Leith Hospital he further complained of feeling excessively weak, and from time to time suffered from attacks of epistaxis.

Family History.—Nothing to note.

Social History.—He has lived a very irregular life, and formerly drank to excess.

Condition in October 1908.—Temperature, 97·8 ; pulse, 76 ; respiration, 18.

The attitude is dorsal, and there is no dyspnœa.

The patient has a general pseudo-infantile expression, and looks drowsy and lethargic. His movements are slow and his mood listless and melancholy. He speaks slowly and indistinctly, and needs to be roused before he answers. The skin is harsh and dry, and the hair on the face very scanty. The moustache resembles that of a boy at puberty ; on his chin there are only a few scattered hairs of feeble growth, and on his cheeks no hair at all. The scalp has a fairly good covering. In the axillæ the hair is absent, while the pubic hair is less than average. On the temples there is some brownish pigment, and

the veinules of the cheek are very markedly dilated. On the body there are numerous supple and thin white scars. The skin of the legs and feet has some copper-coloured patches, and there is some œdema of the feet and along the tibiæ.

On November 9, 1908, the patient weighed 9 st. 9½ lb.

Urinary System.—No pain on micturition. Great frequency. Amount, 160 oz. Colour, light straw. Reaction neutral. Slight mucus and phosphate deposit. Urea, 197 grains.

During forty-seven days in hospital in 1908 the average amount of urine passed daily was 148 oz., the maximum being 170 oz. and the minimum 128 oz. The specific gravity varied from 1002-1014, and was generally 1005. The reaction remained neutral or acid. There was no sugar or casts. A mere trace of albumen was present once or twice—usually none. The urea was estimated on eighteen occasions, and varied from 190-750 grains; on eleven of these it was 300 grains or under, and on only three occasions did it exceed 400 grains. The kidneys not palpable.

Alimentary System.

Subjective.—Great thirst, dryness of mouth, no nausea or vomiting. Bowels generally regular.

Objective.—Teeth very bad. Tongue coated with yellow fur; brown at tip and on dorsum. Gums rather soft. Slight tenderness on palpation over epigastrium. Lower edge palpable on deep respiration. No fluid thrill. Liver, ¾ inch below costal margin in mammary line, and upper margin of fourth interspace. Some dulness in flanks.

During the forty-seven days in hospital in 1908 he continued to complain very much of thirst. His appetite was good, except when he felt faint and had some nausea and epigastric discomfort.

Circulatory System.—Subjectively nothing to note. Apex beat neither visible nor palpable. No epigastric pulsation. Flicking systolic pulsation in episternal notch. Some dilated veins on thorax. Percussion indicated a heart of normal size and position.

Auscultation.—Cardiac sounds feeble, but closed in all areas. First sound almost inaudible in the mitral area, and inaudible in the aortic and tricuspid area. The blood-vessel walls not

thickened. Pulse 64, regular, small amplitude. Tension low. Systolic B.P., 108; diastolic B.P., 88. Sphygmographic tracing likewise indicated a somewhat low tension.

When in hospital the patient had three syncopal attacks; the skin became clammy, and he suffered from epigastric discomfort and nausea without vomiting.

Hæmopoietic System.—Spleen not enlarged. Thyroid not enlarged. No enlarged lymphatic glands. Blood count—R.B.C., 4,210,000; W.B.C., 8100; Hb 80 per cent. Nothing abnormal in film.

Nervous System.—Intelligence slow. Speech rather slow and indistinct. Is drowsy, and sleeps a great deal. He complains of giddiness, but suffers from no abnormal sensations, delusions or headache. His memory is good. Sensibility to touch, heat and cold normal. Position normal. Co-ordination good. Cranial nerves normal, except the third. There is ptosis on left side. Pupil dilated. Internal and inferior rectus paralysed. Diplopia. Fields normal, but colour-test has not yet been done. Fundus normal.

Reflexes. Some increase of knee jerk. Achilles jerk not obtained. No Babinski. No clonus. During the greater part of the time in hospital he remained drowsy and lethargic, and sometimes complained of headache, giddiness, and nausea.

Respiratory System.—Some impairment of the note at the right apex, where the breathing is bronchial. There were no symptoms or signs indicating any active morbid process. The respiratory rate varied between 18-26, and it was usually 20-22. No creps. at bases of lungs.

Integumentary System.—As already described. The patient states that formerly he had a well-grown moustache.

On November 6th it is noted that the patient's general condition had improved. His pulse was stronger and the heart sounds were less feeble. He was allowed up in the afternoons. On December 3, 1908, he was discharged, though the thirst and polyuria were still excessive. He weighed 10 st. 4 lb. on discharge, having gained 8½ lbs. during his stay in hospital.

When readmitted to Leith Hospital ten months later (October 1, 1909) he complained of weakness, lassitude, giddiness, and thirst.

His expression was sleepy and his movements slow.

His weight was 9 st. 4 lb.

Systolic blood-pressure, 100-105. Pulse 74-80, and rather feeble. Respiration 24.

The gums were soft and spongy and frequently bled. He had several syncopal attacks. Sometimes he complained of severe headache. It was noted that there was a slight depression on the frontal bone on the right side. The area of this depression had a diameter of three-quarters of an inch.

The following note was made upon the condition of the reproductory system:—

The penis is small and the testes are in proportion still smaller. They are soft and do not give the testicular sensation on palpation. The patient stated that this atrophy had occurred recently—not more than twelve months ago.

There is a scar on the right groin.

Integumentary System.—The skin is cool and moist. It seems very thin and has very few hairs. There is an even thick layer of subcutaneous fat all over the trunk, giving a feminine appearance.

The shape of the hands and fingers is unusual in a labourer. The hand is finely, almost delicately, shaped, and the fingers are long and tapering.

Hæmopoietic System.

Thyroid not enlarged.

R.B.C. 5,100,000

W.B.C. 9,900

Hb 95 per cent.

Polymorphs 48 per cent.

Lymphocytes 45 per cent.

Eosinophiles 4 per cent.

Transitionals 2 per cent.

Lymphocytes chiefly large.

Urinary System.—During thirty-five consecutive days the average daily excretion of urine was (as on the last occasion he was under observation) 148 ounces. There was no albumen or sugar.

Several X-ray photographs were taken, and these uniformly showed an abnormally shaped sella turcica. It appeared to be

very much flattened; the clinoid processes appeared to be widely separated, so that the cavity was wide, with a flat base.

Dr Sinclair examined the eyes on December 14, 1909, and reported that both eyes had $V = \frac{2}{3}$. The fields were normal, but no colour test was made.

The fundi were normal.

The reactions to light and accommodation were present in both eyes. The reaction to light was very little.

Treatment.—Before opotherapy was resorted to, such drugs as nux vomica, quinine, digitalis, squills, strophanthus, hypophosphites, pot. iodid, mercurial vasogen had each been given a full trial without any decided improvement.

Sod. chloride was also tried in the hope that a retention of fluid might be effected, but the polyuria remained undiminished. The administration of pituitary tabloids (grs. 2), prepared from the whole gland, was begun on December 8, 1909, one night and morning.

As already stated, the average excretion of urine during 1908 and 1909 was 148 oz.; during the first nineteen days of opotherapy the average was 115 oz., while on the thirty-six following days the average was 81 oz., a reduction of 67 oz. on the daily average of 1908 and 1909. This improvement was accompanied by a marked change in his general condition. He gradually became more alert, and asked to be allowed up; he interested himself in what went on around him, and spoke and laughed with the men and children in the ward. On December 17th it was noted that he "feels and looks very much brighter." On December 19th and 25th he had fainting attacks. After the second he suffered severely from headache for two days, and the small depression on the right frontal bone was tender on pressure. This attack was the last.

The following extract from the notes of January 15, 1910, indicates the progress made: "There has been a marked change in the patient's general condition since the administration of pituitary extract was begun. Formerly he was dull and lethargic and his cerebration slow. He moved in a dull, slow way, and spoke little to the other patients. He is now much brighter, more active in his movements; he talks a good deal to the other patients, and sometimes plays with the children. His voice is

gradually losing its monotonous character. His moustache is observed to be a little thicker and stronger."

On January 15th he was sent to the Convalescent Home, the treatment with pituitary being continued. On January 31st his supply of tabloids failed him, and he was readmitted to hospital on February 5th complaining of drowsiness, giddiness, and severe headache. The pituitary treatment was at once resumed at the maximum dose, and two days later he stated that the headache was much relieved. Both the headache and drowsiness had disappeared on the 8th February. On February 13th it was noted that hair was beginning to grow in the axillæ, and the dose was increased to two tabloids of pituitary substance thrice daily. On the 18th nine tabloids were given, and he continued to receive this dose until 21st March 1910. On this date he left hospital; he felt so well he was eager to return to work.

The blood pressure was as before, 105-115. His weight had increased to 10 st. 13 lbs.

During the period of opotherapy the temperature was normal on 12 per cent. of the readings; on 88 per cent. it was sub-normal. Previously it reached normal in only 6 per cent.

The following observations were made on the urinary conditions during the period of treatment with pituitary extract:—

February 13.—Amount, 85 ounces. Sp. gravity, 1010. Reaction faintly alkaline. Urea, 33 grammes. Chlorides, 12·5 grammes. P_2O_5 , 2·4 grammes. Inorganic sulphates appear to be normal. Organic sulphates diminished.

February 23.—Amount, 70 ounces. Sp. gravity, 1010. Reaction acid. Urea, 22·5 grammes. Chlorides, 13 grammes. P_2O_5 , 4 grammes. Sulphates as on 13th.

March 3.—75 ounces. Sp. gravity, 1004. Pale straw colour, neutral, no albumen or sugar. Urea, 12 grammes. Chlorides, 4·25 grammes. P_2O_5 , 1·2 grammes. Inorganic sulphates normal. Organic sulphates absent.

March 14.—Amount, 64 ounces. Sp. gravity, 1008. Pale. Opalescent. Urea, 16·5 grammes; chlorides, 3·636 grammes. P_2O_5 , 2·124 grammes. Sulphates as on last occasion.

Summary.—Reviewing this case, I wish to emphasise (1) the striking similarity of the features of this case to those produced in dogs by the removal or partial removal of the

anterior lobe of the pituitary body. Briefly, the points of similarity are—"low temperature, apathy, somnolence, polyuria, asthenia, adiposity, atrophy of testicles, diminution of secondary sexual characteristics, hypotrichosis, and narrow tapering extremities (*cf.* reports of Cushing, Crowe, and Homan's experiments on dogs); and (2) the great improvement resulting from the oral administration of a preparation of the whole pituitary body. The headache, giddiness, apathy, somnolence, and asthenia disappeared; the temperature tended to be higher; the hair growth became stronger on the lip and in the axillæ; the polyuria was very greatly reduced.

Conclusions.—(1) The similarity referred to in Summary (1) immediately suggests that Fröhllich's syndrome may be developed as the result of deficient function of the anterior lobe of the pituitary, whether from primary disease or from the effect of disease in its neighbourhood.

I have to thank Dr Sinclair for reporting on the ophthalmological condition, and Drs de la Trobe-Bateman and Faill, resident physicians, Leith Hospital, for their careful observations and notes on this case.

Abstracts

ANATOMY.

A MODIFICATION OF BIELSCHOWSKY'S SILVER METHOD (423) FOR THE REPRESENTATION OF THE CONNECTIVE-TISSUE FIBRIL NETWORK. (Über die Modifizierung der Bielschowskyschen Silbermethode zwecks Darstellung von Bindegewebsfibrillennetzen.) SNESSAREW, *Anat. Anz.* Bd. XXXVI., May 1910, p. 401.

NUMEROUS recent investigations have brought out the importance of the very fine connective tissue fibrils which form the stroma of many organs, *e.g.* the liver, spleen, and pancreas. These reticular fibres, of which the "Gitterfasern" of the liver are taken as type, appear only after the use of special staining methods, and the author claims that by his modification of Bielschowsky's method it is possible to represent the most delicate fibrils electively. The only deviation from Bielschowsky's method is that the frozen

sections are placed in iron alum solution (2½-10 per cent.) for four days previous to the use of the silver.

The result is a relatively elective stain, for the connective tissue fibril network stands out very dark against the faint grey of the collagen fibres. Nerve fibres do not stain at all, or very faintly.

In the spleen the reticular network is continuous with the adventitia of the small capillaries, and forms a more or less dense network round each. These fibrillar tubes may be looked upon as a condensation of the reticular tissue of the spleen.

In the liver the fibrils form an unbroken framework, in the spaces of which lie the parenchymatous elements. In the larger meshes are found the vessels and ducts of the portal tracts, and in the finer meshes are the interlobular cell rows.

In the kidney, pancreas, testicle, sebaceous, and other glands these fine fibrils form the membrana propria of the tubules.

In the membranes of the brain and spinal cord this fibrillar network is closely related to the media of the vessels. As these pass into the nervous substance, carrying with them, as their adventitia, the inner layers of the pia, a space—the Virchow-Robin adventitial lymph-space—is left between the fibrillar tube and the adventitia.

The author leaves unanswered his own question concerning the relationship of these fine fibrils to the elastic tissue.

JAMES W. DAWSON.

PHYSIOLOGY.

RECENT RESULTS IN BRAIN PHYSIOLOGY. (Ueber neuere (424) *Ergebnisse der Hirnphysiologie*.) MAX ROTHMANN, *Berl. klin. Wchnschr.*, No. 17, 47 Jahrg., S. 757, 1910.

THE author recapitulates the history of experimental localisation of function in the cortex cerebri, and describes the most recent methods and the conclusions which have been arrived at in this field of work.

With regard to the motor area in the neighbourhood of the fissure of Rolando, since this region is distinguished by the presence of the giant pyramidal cells, these have been assumed in recent times to be the cortical motor elements which are alone electrically excitable. In the view of the author, however, the region of electrical excitability is much wider than that of the giant cells. A distinction has recently been drawn, especially in the case of the anthropoid apes, between the precentral and postcentral convolutions. The latter, which contains no giant cells, is regarded as related to sensation alone, while it is considered that the former is excitable and possesses a motor function.

The author believes that so definite a separation of the two convolutions is not now possible; every lesion in the region of the central gyri appears to affect motility and sensation together. Also, in the majority of cases in lower apes, stimulation effects can be obtained from the postcentral convolution, although in a less degree than from the precentral. In anthropoids excitability is almost entirely restricted to the anterior gyrus, and the same holds good in the human subject. There appears thus to be a tendency towards greater differentiation of motility and sensation in the ascending animal series, so that motor effects are obtained more from the anterior part, sensory more from the posterior part of the region. A complete separation of function has not, however, taken place.

Monakow's diachisis theory is described. This theory, which is based chiefly upon human pathology, takes account of the fact that every portion of the cortex is intimately connected with numerous other regions, partly cerebral, partly belonging to lower levels of the central nervous system. If an area of the cortex is removed, the impulses which pass from it to other regions are at the same time removed, and the latter, although not directly damaged, may lose their function, only to regain it after weeks or months.

In the case of experimental lesions in healthy animals, on the contrary, functions not directly attacked are demonstrable immediately after the operation. The power of restitution is so great that it is essential to begin observations as soon as possible after operation, otherwise important consequences of the extirpation will be missed. Diachisis is therefore of little importance in cerebral physiology.

W. A. JOLLY.

**THE SHARE OF THE SYMPATHETIC NERVOUS SYSTEM IN
(425) THE INNERVATION OF THE HEAD. (Die Beteiligung
des sympathischen Nervensystems an der Kopfinnervation.)
MÜLLER and DAHL, *Deut. Archiv f. klin. Med.*, Bd. 99, Hft.
1 and 2, S. 48.**

In this paper a full description is given of the sympathetic nerve supply of the head. It is well illustrated, and numerous references to literature are given. It is difficult to give an abstract of such a paper, but some of the points brought out are as follows:—The ciliary, sphenopalatine, otic, submaxillary, sublingual, and superior cervical ganglion all contain solely cells of the sympathetic type, *i.e.* with numerous dendrites; they differ, however, amongst themselves. The cells of the ciliary ganglion have their processes

all intracapsular, some having fine dendrites all round the cell, others thicker dendrites and only at one side. The cells of the sphenopalatine and otic ganglia stain very indistinctly, but in man their dendrites are intracapsular and come from all round the cell. The submaxillary is characterised by cells with numerous long processes, and as they are intracapsular they form a tangled network round the cell body. In the superior cervical ganglion, although there are cells with short hooked intracapsular processes, most of the cells have long dendrites which break through the capsule.

The afferent fibres come from various cranial motor nerves. The efferent fibres, which go to non-striped muscle and glands, run along with various cranial sensory nerves. The pupil, lachrymal, and salivary glands and vessels of the head and face have a double (and antagonistic) nerve supply from the autonomic system of the mid-brain and medulla and from the cervical sympathetic. This functional and pharmacological antagonism is in keeping with the histological differences.

These ganglia respond to three sets of stimuli:—

1. A sensory stimulus more or less specific for each,
e.g. light narrows the pupil,
 irritation of conjunctiva causes flow of tears, etc.
2. A sudden conscious feeling of pain in any part of the body causes widening of the pupil, flow of tears and saliva, and flushing of the face.
3. Powerful mental impressions of all sorts express themselves through action of various parts supplied by the sympathetic pupil—tears, saliva, sweating, blushing, etc.

J. H. HARVEY PIRIE.

EXPERIMENTS ON THE INTRACRANIAL VOLUME BY MEANS

(426) **OF CERTAIN DRUGS.** (*Versuche über die Beeinflussung des intra-craniellen Volumens durch einige Arzneimittel.*)
 WINKLER, *Wien. Med. Wochensch.*, 1910, Nos. 23, 24, 25, and 26.

THE experiments were performed on curarised dogs; the brain was exposed in the neighbourhood of the longitudinal sinus by a trephine operation, and a manometer for registering the changes in intracranial volume was fixed into the trephine opening. The manometer was attached to a writing apparatus to allow of graphic records being taken. Experiments were carried out with forty-one different drugs, and the changes in the intracranial volume, in the arterial pressure, and in the venous pressure

brought about by various doses of the drugs were noted. The writer figures and interprets tracings obtained in some of the experiments. It was found that certain of the drugs commonly used in the treatment of headache caused increase in the intracranial volume. He therefore employed, clinically, certain other drugs which also brought about increase in intracranial volume and which had not been used hitherto for the relief of headache. In cases of headache associated with a cardiac condition, it was found that barium chloride (0.03 grammes thrice daily) combined with digitalis gave great relief. Hemicrania in cases of heart lesion was successfully treated by the use of stypticin. Quinine and pyramidon owe their therapeutic action to bringing about an increase in intracranial pressure and a circulation of blood in the brain; the latter drug has been found useful in chronic wasting diseases, after prolonged lactation, and after losses of blood.

In view of the theory that migraine is caused by a disproportion between the cranium and its contents (Spitzer and Schuller), the use of those drugs which increase the intracranial volume must be avoided and those drugs which lessen the volume must be employed; this explains the good results obtained by the use of morphine and of chloral in cases of migraine.

F. E. REYNOLDS.

DOES A SPECIAL SENSE FOR PERCEPTION OF ELECTRICITY

(427) **EXIST?** (*Esiste una sensibilit  specifica per l'elettricit ?*)

A. TAMBURINI, *Riv. di Psicol. applicata*, Anno 6, No. 1.

AFTER a complete r sum  of the literature the author gives his own experiments. He endeavours to discover whether the human organism can discriminate from other sensations those provoked by electricity, as he considers that the answer to this question must precede an inquiry into the existence of a specific organ of electric sensibility. He used a tuning fork having a vibration-frequency equal to that of the hammer of a faradic coil, with the secondary of which it was connected. When the vibrating tuning fork is allowed to stimulate the skin of the observer a current can be switched on without his being informed. In every case the patient readily distinguished the electric vibrations from the mechanical ones. From these experiments the author concludes that the existence of a special sense for electricity is highly probable.

F. GOLLA.

**CRITICAL CONTRIBUTION TO THE QUESTION OF ELECTRIC
(428) SENSIBILITY.** (*Contributo analitico alla così detta sensibilità elettrica.*) S. BAGLIONI, *Rivista di Psicol. applicata*, Anno 6, No. 2.

THE author answers in this paper the criticisms of Tamburini. He considers that the definition of Tamburini of electrical sensibility as a capacity to differentiate a sensation from all others of a like nature is faulty. Such a sensibility can only be called specific when it arises from elemental sensations and cannot be reduced to other more simple sensations. The experiments of the author with the faradic current applied to the tip of the tongue and to the lips have shown—(1) That the weaker excitations give sensations indistinguishable from those of tactile stimuli; (2) that stronger currents give painful sensations; (3) that the limen of effective stimulation is lower in those regions which are normally more fully provided with tactile and pain receptors. Experimenting on the surface of the glans penis, which does not possess tactile receptors, the current can only be felt when sufficiently strong to give rise to pain. The author in conclusion considers that the electric sensibility arises from tactile and pain sensations.

F. GOLLA.

A CONVENIENT INSTRUMENT FOR READY CLINICAL INVESTIGATION OF THE SENSIBILITY TO COOLNESS AND WARMTH. TOM A. WILLIAMS, *Med. Press and Circular*, June 1, 1910.

IN injuries to the lumbar or sacral regions, it is often a question whether it is the damage to peripheral nerves, spinal roots, or spinal cord which perturbs the sensibility. The test of touch by cotton wool is inapplicable when the part is hairy, and the spacing sense is little developed in the lower limbs. Hence the exploration of the temperature sense is particularly valuable in these cases; for when the perception of moderate temperatures (between about 23° C. cool–42° C. warm) is lost while extremes of heat and cold are perceived, one can affirm (Head) that a lesion is not in the cord and must be in peripheral nerve, or possibly, though unlikely, in spinal root.

This thermæsthesiometer is devised to aid the detection of impaired epicritic sensibility. It is more portable and less expensive than the silver tubes used by Head.

The instrument consists of a block of copper in which is embedded the bulb of a thermometer, the scale of which lies in a channel of a wooden handle similar to that of a bath thermometer.

The copper is heated or cooled by immersion in water the temperature of which is measured by the instrument itself. The whole can be carried in the waistcoat pocket.

It is manufactured by Carl, of Washington, D.C.

AUTHOR'S ABSTRACT.

PATHOLOGY.

ON THE CHANGES IN THE PERICELLULAR NERVOUS PLEXUS
(430) **INDUCED BY PATHOLOGICAL PROCESSES IN THE**
NERVOUS SYSTEM. (Sul modo di comportarsi dei plessi
nervosi pericellulari in alcuni processi patologici del tessuto
nervoso.) CARLO BESTA, *Riv. di Patolog. nerv. e ment.*, Vol. 15,
Fasc. 6.

THE author calls attention to the non-existence of observations on the changes that result in the pericellular plexus of the central nervous system in consequence of morbid processes, notwithstanding that the study of such changes might open up a new field of pathology. The methods that he uses for preparation of his specimens are modified from the ordinary Cajal method in that the specimens are first fixed in absolute alcohol acidified with 5 per cent. nitric acid, and then after twenty-four hours passed into alkaline alcohol. By this procedure he claims to avoid shrinkage of the arborisations to the dendrites. He produces his lesions in two ways—by tearing out nerves and by compression of the abdominal aorta. These two procedures cause changes of different type. When the central nervous system is examined sixty days after evulsion of a nerve, the corresponding cells show the characteristic shrinkage and excentricity of nucleus with loss of definition of the internal reticulum. On the other hand, the pericellular arborisations and the amyelinated plexuses are found to be absolutely intact.

In cases in which the abdominal aorta has been compressed for a sufficient time to cause degenerative changes in the lumbar cord, the cells are found thirty days after in a practically normal state, whilst the pericellular arborisations are much shrunken and lose their gemmules, and the amyelinated plexuses are disintegrated and shrunken.

The author regards this failure on the part of the two structures, the cell and the plexus, to undergo similar changes as strong evidence against the views of Held and his school.

F. GOLLA.

THE NEUROMA QUESTION. (*Beiträge zur Neuromenfrage.*)

(431) ZDZISLAW REICH, *Arb. aus dem Neurologischen Institute* (Obersteiner), Bd. XVIII., H. 2, March 1910.

THE opening pages of this article take up the much-discussed question of the conception of the term "neuroma"—are neuromata true tumours, hyperplasias, or heterotopias?

A rapid review of theories of tumour-formation is then given, and the author considers that in discussing neuroma it is important to start from Albrecht's standpoint—a modification of Cohnheim's theory of "embryonic residues." Albrecht thinks it possible that a small portion of the organ, cut off in early development, realises its latent power of development, or that this "cell-complexe" encounters some kind of injury which incites it to further growth.

Again, of great importance, in considering what elements of the central nervous system are the starting-point for tumours consisting of medullated nerve fibres, is the question of the uni- or multi-cellular origin of nerve fibres. Those who hold by the neuron doctrine must deny the existence of such a tumour arising from any element but the ganglion cells, while those who support the teaching of Apáthy and Bethe that a nerve fibre is the product of a chain of cells must regard the Schwann (neurilemmal) cells as the germinal starting-point for such growths.

In the regeneration, and consequently in the normal genesis, of the nerve fibre the peripheral (Schwann) cells and the central (ganglion) cells have both, it is stated, a share. The author believes, with Froriep and others, that both ganglion cells and Schwann cells differentiate from the embryonal neuroblast, and that, normally, parallel to their morphological differentiation they, by means of their mitoses, hand on to their daughter-cells their own characteristics. It is conceivable, however, that aberrant elements have abnormal tendencies and hand on to their daughter-cells those characters in abnormal quantitative conditions. It is not known what are the distinctive characters of those cells and their possible variations, but the author comes to the conclusion that ganglion cells, Schwann cells, and the embryonal mother-cells must all be regarded as being able, under certain conditions, to give origin to a tumour composed of nerve fibres.

Confirmation of this supposition is found in the structure of ganglio-neuroma of the sympathetic and peripheral nerves. In these tumours Knaus and Wegelin found proliferating ganglion cells; Weichselbaum, Falk, and others Schwann's cells; while Beneke and Obendorfer found cells with embryonal characters.

Further confirmation of this is obtained in a review of the literature referring to neuroma of the spinal cord. While all

writers agree as to the fibre constituents of the tumour there is no unanimity regarding the cell-elements. A detailed account is given of the work of these writers—Rebizzi, Switalski, and Schlesinger—whose findings illustrate the three possibilities above referred to.

Rebizzi, in his case of neuroma, found ganglion cells from which the nerve fibres could be traced. The author (Reiche) believes that this was a case of a nucleus of grey matter cut off in foetal life, and that some unknown stimulus started the growth, producing an abundant formation of nerve fibres.

Switalski described multiple neuroma of the spinal cord and pia, and regarded them as developmental anomalies, especially heterotopias. There was an entire absence of ganglion cells among the nerve fibres and of the characteristically-staining Schwann's sheath. A large number of round or oval nuclei were present which closely resembled Schwann's nuclei, but, in the absence of Schwann's sheath, the author regards them only as potential Schwann's cells, and claims that they were the trophic centres for the nerve fibres in the neuroma.

Schlesinger noted an absence of ganglion cells, but the presence of a large number of fibres, which stained similarly to peripheral nerve fibres, and of a large number of cells, which were not connective-tissue cells nor leucocytes, and which, on the strength of the staining-reaction of the Schwann's sheath, the author feels justified in assuming to be Schwann's cells.

In each of the above cases the nodules were microscopic, were found in the grey or white matter, were present through only a few sections, and contained medullated nerve fibres more delicate than the surrounding nerve fibres. The nodules were defined from the surrounding nervous substance by a condensed glial layer.

The author takes these three cases as illustrating the three possibilities of origin for the nerve fibres. The ganglion cells, embryonal cells, and Schwann's cells—morphologically different but genetically the same—bear the same relation (*Keimzellen*) to the growth in each case.

In the second portion of the article the writer passes to the consideration of pial or aberration neuroma, *i.e.* medullated nerve fibres running in the pia and frequently forming neuroma-like nodules. Hellich states that a few such fibres are found normally in the pia, especially in the anterior fissure, but that in greater numbers they must be looked upon as an anomaly. In the investigation of eight cases of tabetic cords the author found typical pial neuroma in three of the cases.

The pia was thickened over the whole surface of the cord, and in this thickened pia, in the lumbo-sacral region, were recognised under the low power numerous points and groups of points like

rows of pearls. Those were situated chiefly on the anterior and lateral aspects, but extended more to the dorsal aspect. On examination with the high power they were found to be medullated nerve fibres cut transversely, longitudinally, or obliquely, and were either isolated or in bundles or forming nodules.

If the fibres on the anterior aspect were followed upwards in serial sections, the transversely-cut fibres on the margin of the pia became oblique and longitudinal as they reached the emerging anterior roots. A direct transition of these fibres into anterior roots could be frequently traced, so that their connection with the latter could not be doubted. No distinction could be drawn between isolated fibres, bundles, or nodules as to their origin, accidental factors (*e.g.* mechanical conditions and relations of space) alone having occasioned their arrangement and position. If the fibres are traced downwards we find that the nerve bundles unite together and leave the pia as small nerve trunks, and that the nodules split up into obliquely-coursing fibres, running towards the periphery of the pia and joining the above nerve trunks.

The fibres on the lateral aspect could be traced passing directly from the white matter into the pia, and then turning ventral- or dorsal-wards. Those on the dorsal aspect were morphologically identical with those in other parts of the pia; a direct connection could frequently be proved between these bundles and the fibres radiating into the posterior horns.

The author concludes that the pial fibres in the ventro-lateral portion of the cord must be regarded not as aberrant-root fibres, but as true anterior roots leaving the spinal cord in an atypical way; that the obliquely-coursing fibres develop into nodules, owing to mechanical conditions, and these, later, become resolved into fibres which pass obliquely towards the periphery of the pia; that analogous conditions are found in relation to the posterior nerve roots; and, further, that such appearances must be regarded as supporting the theory of the increased vulnerability of the lumbar cord in tabes.

JAMES W. DAWSON.

**ON THE ALTERATIONS OF THE INTERNAL RETICULAR
(432) APPARATUS OF NERVE CELLS FOLLOWING ON LESIONS
TO NERVES.** (*Sulle alterazioni dell' apparato reticolare interno delle cellule nervose motrici consecutive a lesioni dei nervi.*) FERUCCIO MARCORA, *Riv. di Pat. nerv. e ment.*, Vol. 15, Fasc. 7, 1910.

OBSERVATIONS were made on the nerve cells of the hypoglossal nucleus after either cutting or tearing out the nerve. Four days after the operation of tearing out the nerve in the cells of the

hypoglossal of the rabbit the internal reticulum appears to be broken up and is toward the periphery of the cell. The protoplasm shows a central almost homogeneous area which is coarsely granular. After fifteen days the changes are more profound. The contours of the cells become irregular and undecided, and the nucleus appears to be projecting from the cell and is only retained by a thin layer of protoplasm. The reticular apparatus shows more evident signs of disturbance, and it entirely loses its reticulated appearance, being represented by small particles stained by silver and united by very fine threads. After simple section of the nerve the changes observed are of the same nature, but much less marked. In animals kept for forty-five days after section of the nerve the observation of Fano could be verified that the nerve cells during regeneration show marked hypertrophy. F. GOLLA.

THE ACTION OF HÆMOLYTIC SERA AND POISONS ON THE
(433) NERVE FIBRES. (*Sulla azione di sieri e di veleni emolitici sulle fibre nervose.*) BOSCHI, *Riv. di Patol. nerv. e ment.*, Fasc. 4, 1910.

THE author has adopted in his researches as hæmolytic substances frogs' serum and glycerine. Neither of these have a direct action on their nervous system. Gradual injections of small doses of these substances produced in rabbits a fatal hæmolysis, the intoxication being spread over about twenty days. From a histological examination of the peripheral nerves it was found that except for occasional varicosity of the myelin sheath there was no generalised lesion. In the spinal ganglia there was a slight degree of chromatolysis, and this was still more evident and diffused in the cells of the anterior cornua. These slight alterations leave one in doubt as to whether they were due to the anæmia or to an actual cytolysis caused by the hæmolytic poisons.

F. GOLLA.

THE NATURE AND MODE OF SPREAD OF POLIOMYELITIS
(434) VIRUS. (*Zur Natur und Verbreitungsweise des Poliomyelitis-virus.*) PAUL RÖMER and KARL JOSEPH, *Munch. med. Woch.*, May 17, 1910, S. 1059.

THE chief points brought out in this communication are that the virus can remain unaltered in virulence after five months' preservation in pure glycerine, and that, in a monkey dying of the disease after intracerebral inoculation, the virus was found in the mesenteric glands. J. H. HARVEY PIRIE.

THE RESULTS OF HISTOLOGICAL AND CHEMICAL EXAMINATION OF 160 CASES OF EXOPHTHALMIC GOITRE. (Ergebnisse histologischer und chemischer Untersuchungen von 160 Basedowfällen.) ALBERT KOCHER, *Arch. f. klin. Chir.*, Bd. 92, H. 2.

FROM a systematic histological study combined with chemical investigation regarding the iodine content of the thyroid gland in 160 cases of exophthalmic goitre, the writer has found that a definite relationship exists between the microscopic and chemical findings and the clinical features in any particular case of this disease. He comes to the following conclusions :—

(1) In the worst type of case the glandular spaces show irregular proliferation of their cellular lining and contain fluid which is rich in iodine.

(2) The more fluid the content of the glandular spaces the more vascular is the gland.

(3) Proliferation of the parenchymatous cells of the gland is a constant feature; it is usually very irregular both in regard to its general distribution throughout the gland and in its local character.

(4) The proliferation and increase in size of the cells is the result of an increased supply of a certain thyroid gland constituent. "This can be absorbed by uniting with certain constituents of the contents of the vesicles, and in this process iodine plays an important part. Absorption, therefore, is dependent on the quantity of the cellular substance on the one hand, and on the quantity and quality of the contents of the vesicles on the other."

(5) Improvement in the clinical features of the case is associated with colloid thickening of the vesicular contents and a diminution in the iodine content.

(6) In cured cases no degenerative or interstitial changes are found in the gland, which on microscopic examination is found to have returned to normal.

(7) That in exophthalmic goitre there is increased absorption of thyroid secretion is undoubted, but that this secretion contains any abnormal toxic constituent these researches have failed to disclose.

D. P. D. WILKIE.

ON THE NATURE OF THE CEREBRAL DISORDER IN (436) GENERAL PARALYSIS. (Zur Frage vom Wesen der paralytischen Hirnerkrankung.) W. SPIELMEYER (of Freiburg), *Ztschr. f. d. ges. Neurol. u. Psych.*, Bd. I., Ht. 1.

THE cerebral changes in general paralysis contain two elements, the one inflammatory, the other degenerative. Whether one of

these two elements is primary, and, if so, which one, has led to much discussion. It was hoped that by the examination of very early cases light might be thrown on the subject; but even in the earliest cases Alzheimer has found both inflammatory changes of the vessels with a cellular infiltrate, and nerve cell degeneration with glia proliferation. He considers that the most essential part of the paralytic process is the parenchymatous degeneration, which is, however, always found accompanied by the inflammatory process; the former is present even when the extent of the changes in the vessels is quite inadequate to cause it. Spielmeyer reports briefly a case which was especially favourable for elucidating this question. The patient was a tabetic woman of 41 years, who, scarcely four weeks before death, developed marked excitement with ideas of greatness and hallucinations; the patient died from a pelvic abscess. In the brain the infiltrative changes were limited to a comparatively small region of the cortex, while well-marked degenerative changes could be demonstrated in other areas. The degenerative changes of the parenchyma were frequently more marked in the regions free from the inflammatory changes. At first the anatomical diagnosis was difficult, as in many preparations from various cortical regions no definite change of the tissue was observed. The nature of the process in the affected areas enabled one to make the diagnosis.

The author, therefore, agrees with Alzheimer that the degenerative element in the paralytic picture cannot be explained as secondary to the inflammatory changes, but is an independent part of the process.

C. MACFIE CAMPBELL.

THE ANATOMICAL BASIS OF THE PSYCHOSES. (La base (437) *anatomique des psychoses*.) LADAME, *Nouv. Icon. de la Salpêtrière*, March-April 1910, p. 184.

Do there exist constant, demonstrable, typical cerebral lesions as the anatomical basis of mental disease, and is it possible to attribute priority to the psychical or the organic lesion in the genesis of psychoses? These are the questions which the author attempts to answer in this interesting communication.

In some psychoses the lesions are essentially parenchymatous: in others, they are interstitial and vascular. The former group comprises the functional psychoses—*dementia præcox*, manic-depressive insanity, *amentia*, the acute psychoses, the psychopathics, etc. In the second group are general paralysis, arterio-sclerotic dementia, senile dementia, the epilepsies, idiocy, etc. This grouping, however, is both tentative and transitional. The only method of obtaining certainty is by the systematic study of the myelo- and cyto-architectonic structure of the cerebrum in

these diseases. Hitherto no really typical or constant lesion has been described in any of the psychoses.

The second question in our present state of knowledge cannot be answered conclusively, although the author inclines to the materialistic view.

S. A. K. WILSON.

THE TREPONEMA IN SYPHILITIC CEREBRAL ARTERITIS.

(438) (*Constatation du tréponème dans l'artérite cérébrale syphilitique.*) A. SÉZARY, *C. R. de la Soc. de Biol.*, lxxviii., 1910, No. 21, p. 985.

A PATIENT, aged 43, one month after the chancre developed generalised psoriasiform syphilides, and forty-five days later right hemiplegia, followed by coma and death. At the autopsy two almost symmetrical foci of arteritis were found at the origin of each Sylvian artery. Histologically the vessels showed the typical lesions of syphilitic arteritis in the intima and adventitia. Treponemata were found exclusively in some caseous gummata situated in the adventitia.

J. D. ROLLESTON.

EXAMINATION OF PATHOLOGICAL CEREBRO-SPINAL FLUID

(439) **BY MEANS OF THE STAINING REACTION OF LIVING CELLS TOWARDS NEUTRAL RED.** (*Étude du Liquide Céphalo-Rachidien Pathologique au moyen des colorations vitales au rouge neutre.*) E. WEILL and A. POLICARD, *Arch. de Med. des Enfants*, June 1910, p. 449.

THE research was undertaken with a view of determining by means of the neutral red reaction the degree of vitality of the cellular elements in the cerebro-spinal fluid in cases of meningitis.

Technique.—If the cerebro-spinal fluid is purulent, a small drop of it is placed on a slide and diluted with a drop of 0·8 per cent. solution of sodium chloride; to this is added a drop of 1 per cent. solution of neutral red (Grübler) in distilled water, the slide being shaken to mix the solutions. If the cerebro-spinal fluid is merely cloudy, a drop of the fluid and a drop of the neutral red solution are mixed together on the slide. If the cerebro-spinal fluid contains very few cellular elements, it is centrifuged, the fluid above the deposit is thrown away, and this is replaced by an equal amount of 0·8 per cent. solution of sodium chloride; four or five drops of the neutral red solution are then added and the tube is quickly shaken to dissolve the deposit; after standing one or two minutes, the fluid is again centrifuged and the resulting deposit is examined. In all cases the deposit is examined by putting it on a clean slide, quickly covering with a thin cover-glass, ringing around with

paraffin and immediately examining. Satisfactory permanent preparations cannot be made.

Appearances.—The elements seen are (1) Crystals of neutral red: their origin and significance has not yet been determined. (2) Small, irregular, granular, stained masses: these may be from the disintegration of leucocytes or they may be a precipitate. (3) Leucocytes in four varieties according as they react with the neutral red: (a) unstained leucocytes—these are the living cells; (b) leucocytes with a finely granular structure, the granular elements taking on the stain; these granules are probably composed of dead protoplasm and indicate that the cell is beginning to lose its vitality; (c) leucocytes showing large vacuoles stained bright red; these vacuoles consist of acid elaborated by the cell to digest micro-organisms or debris taken into its substance; these cells are therefore phagocytes; (d) leucocytes with their nuclei stained—these are dead cells.

Conclusions.—The authors support the previous conclusion of Achard and Ramond that the presence or the number of the dead leucocytes in a pathological fluid shows, at least in local lesions, that the reacting cells are being overpowered by the infection.

(1) The predominance of dead leucocytes indicates either a failure in resistance by the leucocytes or great virulence of the toxic products (acute meningitis). The daily enumeration of the leucocytes showing staining of their nuclei enables one to judge the variations in the resistance of these cells, and thus furnishes an observation of great prognostic value.

(2) The observations of cases showing leucocytes of finely granular structure are as yet too few to allow of precise conclusions being drawn.

F. E. REYNOLDS.

CLINICAL NEUROLOGY.

VOLKMANN'S ISCHÆMIC CONTRACTURE. D. M. GREIG, *Edin.*
(440) *Med. Journ.*, June 1910.

THE author reports two cases of Volkmann's ischæmic contracture occurring in the upper and lower extremities respectively, in a lad of 18 and a child of 5 years. In each the predisposing cause was fracture, in the former of the forearm, in the latter of the femur, and the exciting cause too tight bandaging in the application of retentive apparatus. Each was characterised by the initial symptoms of undue pain, swelling and discoloration in the distal parts following the application of the splints, and relieved by their looser readjustment, but subsequent hardness and contraction of the muscles demonstrated the injury which had been induced.

The permanency of the contracture is commented upon, though improvement takes place to a limited extent. In the younger of the two patients a merely temporary alleviation followed subcutaneous tenotomy of the tendo Achillis, while in the elder the improvement seemed to be undoubtedly facilitated and extended by a neurolysis. Except neurolysis from callus or cicatricial tissue, operative treatment is not advised; the injury to the nerves may be completely recovered from, but not that to the muscles. A more general knowledge of the condition would doubtless be followed by more care in the application of constricting apparatus to a limb, and the early relaxation when the initial symptoms indicated the threatened complication. The paper is illustrated by photographs.

AUTHOR'S ABSTRACT.

**CLINICAL STUDY OF THREE CASES OF A FAMILIAL DE-
(441) GENERATIVE DISEASE OF THE NERVOUS SYSTEM, ETC.**

(Etude clinique sur trois cas de maladie familiale dégénérative du système nerveux; association de l'idiotie, de l'amaurose, de troubles multiples bulbo-protubérantiels et de l'atrophie spino-neurotique Charcot-Marie.) BERTOLOTI, *Nouv. Icon. de la Salpêtrière*, March-April 1910, p. 97.

THE three sisters in this family are the children of first cousins; their two brothers, however, are perfectly normal. There is no traceable family history of nervous disease.

Marguerite, aged 25. Progressive idiocy, with numerous psychical and physical degenerative characteristics; optic atrophy and amaurosis; paralysis of upward and downward movements of the eyes; divergent strabismus; slight facio-hypoglossal impairment; no cerebellar signs; extraordinary muscular atrophy of arms and legs of distal type (peroneal) with contractures; no sphincter impairment or sensory disturbance.

Amelia, aged 21. Progressive deterioration of all the mental faculties; complete bilateral optic atrophy and blindness; divergent strabismus; partial paralysis of intrinsic and extrinsic ocular muscles; horizontal nystagmus; disturbances in function of seventh and twelfth cranial nerves; cerebellar asynergy; spasmodic rigidity of lower extremities with loss of tendon reflexes; gross muscular atrophy of all four extremities, exactly analogous to the peroneal type; no fibrillary contractions; sensation and sphincters normal.

Elizabeth, aged 11. Progressive intellectual impairment; slow monotonous speech with dysarthria; double optic atrophy; loss of conjugate upward movement of the eyes; sialorrhoea; transverse smile of myopathic type; no rigidity on contractures; Charcot-

Marie-Tooth muscular atrophy (legs and hands); steppage gait; diminution of tendon reflexes; no sensory or sphincter disturbance.

These peculiarly interesting cases are considered by the author to be analogous to the neuritic or peroneal type of muscular atrophy, in rare cases of which some of the additional features presented by the author's unique series are found. They are quite distinct from the hypertrophic interstitial type of Dejerine and Sottas. Optic atrophy, mental changes, bulbo-pontine symptoms may occur in advanced peroneal muscular atrophy. On the other hand, the ocular paralyses of the present series of cases have never been noted even in the most atypical cases of peroneal muscular atrophy.

S. A. K. WILSON.

MULTIPLE FAMILY INFANTILE SCLEROSIS. (*Sclerosi multipla* (442) *familiare infantile*.) G. D'ABUNDO, *Riv. Ital. di Neuropatol.*, Gen. 1910, p. 1.

THE author cites three cases of multiple infantile sclerosis in two brothers and a sister in which the infective element gave rise in the first three years of life to a clinical syndrome which was absolutely identical, and which appeared to the author to strongly resemble disseminated sclerosis.

The author gives convincing clinical reasons for discarding the view that his cases suffered either from Friedreich's disease or hereditary cerebellar ataxy.

Notwithstanding that the pathology of disseminated sclerosis is obscure, the author hazards the suggestion that the infective toxic processes tends to settle in segmental areas which have been weakened by disturbances occurring in intrauterine life.

F. GOLLA.

SPINAL TUBERCULOUS MENINGITIS IN POTTS' DISEASE. (443) KLARFELD, *L'Encéphale*, May 10, 1910, p. 560.

THE manner of invasion of the spinal meninges by tuberculous material from a caseous vertebra provides an interesting problem. Schmaus believes that the disease passing from the vertebra directly attacks the anterior aspect of the dura mater, and finally overcomes its resistance. Sicard and Cestan advance the view that the diseased material, at first unable to penetrate the dura mater, spreads round the theca, and upwards and downwards, till the roots are reached. Here the dura mater is thinner and much less resistant, so that the tuberculous material soon passes through and reaches the internal aspect of the dura mater and the arachnoid. A carefully examined case now reported by Klarfeld confirms this view. The superficial layers of the dura

are scarcely touched, while its inner aspect is invaded at the roots. In addition, the dentate ligament on either side is markedly involved, and by this means the inflammation has spread to the pia, which is infiltrated, more particularly where the dentate is inserted.

S. A. K. WILSON.

LESION OF CONUS MEDULLARIS FOLLOWING ON LUMBAR

(444) **ANÆSTHETISATION.** (*Affezione del cono midollare in seguito a rachistovainazione.*) G. CELSO, *Riv. Ital. di Neuropatol.*, Vol. 3, Fasc. 3, 1910.

THE case is that of an individual who suffered prolonged disturbances in the motor system in sensation and in the innervation of the bladder and rectum after spinal anæsthesia produced by stovain. Six months after the operation he still had complete incontinence of urine, loss of power of ejaculation, incomplete erections, complete anæsthesia of the rectal and urethral mucosa, abolition of the cremasteric reflex, and total anæsthesia over all the area supplied by the sacral roots.

F. GOLLA.

TYPHOID SPINE. (*Spondylite typhique.*) N. B. POTTER, *Bull. et (445) mém. de la Soc. méd. des Hôp. de Paris*, xxix., 1910, p. 811.

A RECORD of a case in a man, aged 30, in whom the symptoms developed three months after an attack of typhoid fever. The diagnosis was confirmed by Gibney, who first described this condition. The X-rays showed periostitis chondritis and osteitis in the region of the ninth and tenth dorsal vertebræ. Considerable improvement followed the application of a plaster jacket.

J. D. ROLLESTON.

MENINGISM AND LUMBAR PUNCTURE. (*Méningisme.* Ses

(446) *rapports avec la ponction lombaire.* L. BOUSQUET, *Gaz. des Hôp.*, 1910, p. 1025.

BOUSQUET thinks that the term "meningism" should be confined to meningeal symptoms due to hysteria and some phenomena of reflex origin, such as occur in helminthiasis or constipation. As a rule lumbar puncture will determine whether the clinical manifestations correspond to an anatomical lesion. The results of rachicentesis, however, are less absolute than some writers indicate, since there are examples of cytological changes in, and even of microbial invasion of, the cerebro-spinal fluid without clinical signs of meningitis, and still more numerous are cases of clinical and anatomical meningitis without changes in the fluid as revealed

by lumbar puncture. The fluid, therefore, does not always faithfully reflect the anatomical condition of the cerebro-spinal system. In difficult cases it must be examined by cytological, bacteriological, and chemical methods, and the results obtained must be submitted to a rigorous clinical control. J. D. ROLLESTON.

THE DELAYED SEQUELÆ OF MENINGITIS. (Contribution à (147) l'étude des séquelle éloignées des méningites.) By PADOA, *L'Encéphale*, May 10, 1910, p. 540.

A HEALTHY young woman was suddenly seized with a severe sore throat, and two days later, high fever, delirium, photophobia, headache, rigidity of the neck, vomiting, hiccough, strabismus, pains in the limbs and convulsions set in. After being profoundly and gravely ill for fifteen days the patient began to improve, and the symptoms were reduced to painful spasmodic rigidity of the neck, with radiating pains from the spine round the body. The diagnosis of improving cerebro-spinal meningitis seemed quite justified. About ten or twelve days later the patient was to all intents and purposes well, and resumed her employment as shop-assistant. Three weeks later symptoms of weakness appeared in the legs, with some rigidity, progressing until the patient was unable to walk, and necessitating her going to bed, which she has not left for the past seven months. Along with the paralysis appeared the abrupt and painful contractions of the lower extremities, with diminution of sensibility and paresis of the vesical sphincter. Ankle clonus and a double extensor response were found. In short, a dorsal myelitis has supervened on an attack of cerebro-spinal meningitis after an interval of three weeks of apparently perfect health. More than one case remarkably analogous has been recently recorded. S. A. K. WILSON.

TUBERCULOUS MENINGITIS OCCURRING THREE MONTHS (148) AFTER RECOVERY FROM CEREBRO-SPINAL MENINGITIS. (Méningite tuberculeuse survenue trois mois après la guérison d'une méningite cérébro-spinale.) G. LION and R. LE BLAYE, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, xxix., 1910, p. 855.

THREE months after recovery from an uncomplicated attack of meningococcic cerebro-spinal meningitis, a man, aged 49, developed tuberculous meningitis, the symptoms of which closely followed on the worry and overwork caused him by the rising of the Seine. The autopsy showed that the tuberculous lesions were confined to the meninges, which the previous attack had converted into a *locus minoris resistentiæ*. J. D. ROLLESTON.

TYPHOID MENINGITIS. (*Les méningites typhiques.*) CLARET and (449) LYON CAEN, *Gaz. des Hôp.*, 1910, p. 709.

ONLY thirteen cases of typhoid meningitis have been recorded in which the typhoid bacillus has been found during life in the cerebro-spinal fluid (*v. Review*, 1908, pp. 491 and 597, and 1909, p. 740).

In some cases the meningitis may not be accompanied by any symptom of typhoid fever (*v. Review*, 1908, p. 597, and 1909, p. 200), while in others the meningeal symptoms have occurred without the bacillus being found. In some instances the typhoid bacillus was associated with other organisms, such as the staphylococcus, pneumococcus, tubercle bacillus, streptococcus, or meningococcus.

The cerebro-spinal fluid may be turbid, purulent, hæmorrhagic, or, on the other hand, clear and apparently normal. A cytological examination has been made in comparatively few cases. Widal has recorded cases in which the fluid contained no cells. In Rocaz and Netter's cases lymphocytosis was noted. In Claret and Lyon Caen's case polynucleosis was succeeded by lymphocytosis. The symptoms and pathological anatomy are the same as in other varieties of acute meningitis. The prognosis of typhoid meningitis is relatively good, as eight of the thirteen recovered. Treatment consists in the employment of lumbar puncture, intraspinal injection of collargol, and use of hot baths.

J. D. ROLLESTON.

SEROUS MENINGITIS IN TYPHOID FEVER, AND ITS TREATMENT BY LUMBAR PUNCTURE. (450) R. STEIN, *Amer. Journ. Med. Sci.*, Vol. 139, 1910, p. 542.

STEIN records three cases of typhoid fever in which pronounced somatic and psychical symptoms of meningitis were associated with a clear cerebro-spinal fluid, free from cells and typhoid bacilli. In each case lumbar puncture was followed by considerable improvement. In the first case one, in the second two, and in the third three punctures were performed, 20 to 40 c.c. being removed each time. (*Cf. Review*, 1908, p. 557.) J. D. ROLLESTON.

ACUTE CEREBRO-SPINAL MENINGITIS WITH FULMINATING ONSET. (451) (*Méningites cérébro-spinales aiguës à début foudroyant.*) R. DALMENESCHE, *Thèses de Paris*, 1909-10, No. 202.

CEREBRO-SPINAL meningitis with fulminating onset must be distinguished from that in which the disease commences with its

usual symptoms, but pursues a rapidly fatal course. Three varieties of fulminating onset are described, according as epileptiform convulsions, delirium, or coma predominate.

Sometimes these symptoms are really initial, and indicate the commencement of meningeal inflammation. In other cases they are only initial in appearance, a latent phase having preceded. The evolution of these cases is rapid, but not necessarily fatal. Their medico-legal interest is considerable. The prognosis is favourable as a rule after an epileptiform onset, but very grave in comatose cases. The thesis contains the histories of twenty cases, including two hitherto unpublished, in which meningococci, streptococci, and pneumococci respectively were the causative organisms. There were seven recoveries and thirteen deaths.

J. D. ROLLESTON.

THE 1909 EPIDEMIC OF CEREBRO-SPINAL MENINGITIS AT (452) RENNES. (À propos de l'épidémie de méningite cérébro-spinale de Rennes, 1909.) R. TIZON, *Thèses de Paris*, 1909-10, No. 200.

THE thesis is based on the study of 25 cases, seven of which were in children aged from three months to nine years, 6 in adolescents from eleven to seventeen years, and 12 in adults from nineteen to fifty-nine years. The cerebro-spinal fluid showed Weichselbaum's organisms in 21 cases, pseudo-meningococci in 2, and in 2 no cultures were made; 15 recovered. Facial paralysis, which occurred in one case, was the only sequela observed. In all but four cases, three of which were fatal, serotherapy was employed, the serums of Flexner, Dopter, and Kolle-Wassermann being used.

J. D. ROLLESTON.

RELAPSE IN CEREBRO-SPINAL MENINGITIS, WITH NOTES (453) ON A CASE TREATED BY SERUM AND VACCINES.

JOHN RITCHIE, *Edin. Med. Journ.*, June 1910.

THIS paper supports the generally accepted view that serum treatment has no effect in preventing relapses. A series of 167 cases treated in Edinburgh City Hospital fell into three groups:—

(1) Forty-nine cases treated by Flexner's serum, with a case-mortality of 46·9 per cent., and a relapse rate of 16·3 per cent.

(2) Forty cases treated by other sera, with a case-mortality of 72·5 per cent., and a relapse rate of 12·5 per cent.

(3) Seventy-eight cases treated without serum, with a case-mortality of 83·3 per cent., and a relapse rate of 6·4 per cent., showing that the group in which the greatest number of patients survived had the greatest number of relapses, and *vice versa*.

Relapses should receive the same treatment as first attacks.

A case is quoted of a man, aged 20, who had six well-marked attacks of cerebro-spinal meningitis between 23rd June 1909 and 1st January 1910, the intervals varying from twelve to seventy-eight days. After his last relapse he was treated by a vaccine prepared from his own strain of meningococcus. The first injection was followed by headache, stiff neck, pain in the back, and fever, the second by a slight elevation of temperature, the third and fourth by no symptoms. He had no more relapses, and since discharge has remained perfectly well, save for deafness, which dates from his first attack.

AUTHOR'S ABSTRACT.

TRANSIENT CEREBRAL HEMIPLEGIAS AND THEIR EX-
(454) **PLANATION.** (Ueber rasch vorübergehende zerebrale Hemiplegien und deren Erklärung.) GEORG RIEBOLD, *Münch. med. Woch.*, Mai 17, 1910, S. 1063.

THE conclusions come to by the writer with regard to transient hemiplegias are as follows:—

1. Slight, very transient cerebral hemiplegias may be due to the presence of local disease in the cerebral vessels, resulting in the mechanical hindering of the blood stream and consequent momentary insufficient, but rapidly repaired, blood supply of considerable areas of the brain; and this without any anatomical lesion.

2. They may also be explained by embolus or thrombosis of the smaller and smallest vessels, with rapid development of a sufficient collateral supply, which can always develop through the presence normally of anastomoses between the finest twigs of the Sylvian artery.

3. An observation of the writer's points to the occasional occurrence of anastomoses between large branches of the middle cerebral artery, so that a hemiplegia due to the blockage of even a main branch may be rapidly recovered from.

J. H. HARVEY PIRIE.

RIGHT ORGANIC HEMIPLEGIA WITH APHASIA OCCURRING
 (455) **FIVE HOURS AFTER A STAB IN THE PRECORDIAL**
REGION. (Hémiplégie droite organique avec aphasie, survenue
 cinq heures après un coup de couteau dans la région précordiale.)
 APERT and STÉVENIN, *Bull. et mém. de la Soc. méd. des Hôp. de*
Paris, xxix., 1910, p. 780.

A MAN, aged 19, five hours after a suicidal wound, developed organic hemiplegia, the diagnosis of which was confirmed by Babinski. The writers regard an embolic origin as unlikely, as the heart itself was not wounded, and suggest the possibility of a localised cerebral ischæmia associated with intense venous congestion and subsequent hæmorrhage. J. D. ROLLESTON.

TRANSIENT HEMIPLEGIA IN A CARDIAC PATIENT WITH
 (456) **ENLARGED LIVER AND ASCITES, DISAPPEARING**
RAPIDLY ON PARACENTESIS. PATHOGENY. (Hémi-
 plégie transitoire chez une cardiaque avec gros foie et ascite,
 disparaissant rapidement par ponction d'ascite Pathogénie.)
 E. HIRTZ and BEAUFUMÉ, *Bull. et mém. de la Soc. méd. des Hôp.*
de Paris, xxix., 1910, p. 734.

A WOMAN, aged 49, suffering from mitral and aortic disease, with failing compensation, was seized one morning with left hemiplegia and dysarthria. On admission to hospital the symptoms closely resembled those of organic hemiplegia, due to a focal lesion. Owing to her dyspnœa and ascites, abdominal paracentesis was performed—13½ hours after the probable onset of the hemiplegia. During the operation a transformation scene took place. After 5 litres had been withdrawn, speech became clear and movements in the fingers began to return, and half an hour after the completion of the paracentesis, at which 10 litres had been evacuated, the hemiplegia had completely disappeared. The writers attribute the paralysis to compression of the right motor area by cerebral œdema, which, on evacuation of the ascites, passed by osmosis into the general circulation. This mechanical origin for the hemiplegia is more probable than a theory of hepatic toxæmia, which could not explain the rapid and complete disappearance of the paralysis. J. D. ROLLESTON.

CEREBELLAR ABSCESS FOLLOWING MEASLES. (*Considerazioni (457) cliniche su di un caso di ascesso del cervelletto probabilmente postmorbilloso.*) C. CANTIERI, *Riv. crit. di clin. med.*, 1910, pp. 306-310 and 321-327.

A LENGTHY description of a case of abscess of the right lobe of the cerebellum in a boy aged 10 years, diagnosed in life as a cerebellar tumour, the first signs of which developed three months after recovery from an uncomplicated attack of measles. The only other example of intracranial abscess following measles was recorded by Collet (*v. Review*, 1907, p. 566). In neither case was there any evidence of otitis media.

J. D. ROLLESTON.

TUBEROSE SCLEROSIS. (*Ueber tuberöse Sclerose.*) BONFIGLI, (458) *Monatsschr. f. Psychiat. u. Neurol.*, May 1910.

THIS paper records two fresh cases of tuberous sclerosis, the details being briefly as follows:—Case I. Male, aged 5 years at time of death. Neuropathic family history. Convulsions since birth, which in the later years of the patient's death increased in frequency (eight to ten daily). Idiotic; unable to walk; spastic paralysis of legs; athetosis. Death from phthisis. On post-mortem examination, typical tuberous sclerosis of the cerebral cortex, and a tumour of the left kidney. Case II. Male, aged 7 years at death. Father alcoholic; family history good in other respects. Convulsions since early childhood, which recur at intervals of from ten to fifteen days. Idiotic; convergent strabismus. Death from uræmia. On post-mortem examination, tuberous sclerosis, large tumour of left kidney.

A careful record of the microscopic examination of the nervous system in both cases is given. The details do not lend themselves to summary; the changes were similar to those which have been found in other cases. The tumours of the kidneys were hypernephromata. In his commentary on the cases, Bonfigli argues that the large atypical cells which are constantly found in the sclerotic patches, and about which considerable diversity of opinion exists, are of neuroglial origin. In neither case was a diagnosis made during life, because of the absence of adenoma sebaceum or signs of visceral tumour.

J. S. FOWLER.

DISTURBANCES OF SENSIBILITY IN CEREBRAL LESIONS OF A
 (459) **RADICULAR TYPE.** (*Disturbi della sensibilità di origine*
cerebrale a tipo radicolare.) GIUSEPPE CALLIGARIS, *Riv. di Pat.*
nerv. e ment., Vol. 15, Fasc. 7, 1910.

A PATIENT of 50, who was suffering from a left hemiplegia of cerebral type and of sudden onset, presented the following sensory disturbance:—On the right side sensibility was normal. On the left there was a hemihypoesthesia, which, however, was in many places very slight and inconstant. On the external aspect of the left upper extremity there was, however, a constantly found more marked hypoesthesia. This area of loss of sensibility increased in intensity toward the proximal extremity of the limb and affected the three first digits. Towards the trunk it became more diffuse, and formed a thoracic half band having for its upper limit the cervical area, and below the fourth thoracic segment. The hypoesthesia was more marked for pain than for temperature, and least of all for tactile stimuli. In the lower extremity there was a band of hypoesthesia which was constant and well marked, taking the outer surface of the limb and the three last toes of the foot, where it was more marked in intensity in contradistinction to the upper limb. This area was limited above by a transverse line at the level of the umbilicus. The sense of position was impaired in the left foot and almost absent in the three fingers of the left hand, which were most affected by the hypoesthesia. Dismissing the possibility of a spinal lesion co-existing with the cerebral one, the author proceeds to discuss and enumerate other recorded cases of cerebral lesions with a radicular type of anæsthesia.

F. GOLLA.

TRAUMATIC HYSTERIA. By JOHANNY ROUX, *Nouv. Icon. de*
 (460) *la Salpêtrière*, March-April 1910, p. 202.

BABINSKI has shown that the so-called stigmata of hysteria are of no importance, especially since they are the result of suggestion in the course of a medical examination; that œdema, trophic change, fever, etc., are the result of more or less conscious and voluntary deception on the part of the patient; and that hæmoptysis, hæmatemesis, anuria, etc., are not and cannot be symptoms of the disease. He uses the term pithiatism to indicate that the hysterical patients' condition is producible by suggestion and removable by persuasion. He admits, further, that simulation is constantly present in hysterical cases. He does not know of any

criterion whereby to distinguish suggested phenomena from simulated phenomena. Roux therefore proposes to define those symptoms as hysterical which it is possible to reproduce by simulation, and in this essay the idea is admirably worked out.

The paper was sent to the Journal in which it appears a few days before the author's lamented death. S. A. K. WILSON.

A CONTRIBUTION TO THE STUDY OF DERMOGRAPHISM.

(461) (*Contributo allo studio del dermografismo.*) GIACOMO MILELLA,
Ann. di Neurolog., Anno 28, Fasc. 1, 1910.

A HUNDRED cases of dermographism were collected. The author concludes that—

1. Dermographism may occur in perfectly healthy individuals free from neurosis, but that it is almost constant in psychopathic individuals.

2. When present in healthy persons the dermograph lasts only about two minutes.

3. Other things being equal, the dermographic response lasts a shorter time in blonds than in dark-coloured individuals.

4. In neurasthenics the response is more intense and prolonged than in other neuroses.

5. In hysteria and epilepsy, soon after a convulsive attack the response lasts a shorter time than when elicited at some distance from the time of attack.

6. In hemiplegics the response is more prolonged than on the sound side.

7. Dermographism is never pruriginous, as Dejerine has stated.

In some forms of traumatic neurosis there is white dermographism associated with presence of the red variety; either arise according to the pressure exerted by the observer.

F. GOLLA.

SCLERODERMIA AND SYMMETRICAL ASPHYXIA OF THE

(462) **EXTREMITIES.** (*Sclérodémie et asphyxia symétrique des extrémités.*) G. TURRETTINI, *Rev. méd. de la Suisse romande*, April 1910, p. 340.

Two cases are here recorded, one of mild but perfectly typical Raymond's disease in a young girl, the other of sclerodermia

associated with paroxysmal asphyxia of the extremities. This association, which has been noted not infrequently, occurred in a girl of nineteen, who from the age of eleven had suffered from paroxysmal attacks of cyanosis of the extremities (without any previous local syncope). Then gradually scleroderma developed, affecting not only the extremities but also the face. The bones also had undergone a marked dystrophic process. The lesions are attributed to thyroid insufficiency. J. H. HARVEY PIRIE.

PSYCHIATRY.

THE DIAGNOSTIC DIFFICULTIES IN PSYCHIATRY. (Die (463) diagnostische Schwierigkeiten in der Psychiatrie.) A. ALZHEIMER (of Munich), *Ztsch. f. d. ges. Neur. u. Psych.*, Bd. I., Ht. 1.

A GENERAL discussion of the present status of psychiatry. The division of the psychoses into the organic and the functional is apt to be misleading; a more suitable one is that into the exogenous and the endogenous psychoses, the latter arising on the basis of degeneracy. The question of how far these degenerative conditions can be differentiated is discussed; in this connection the author reviews the development of the group of manic-depressive insanity, and emphasizes the fact that by taking into this group cases which had frequently been included in other groups, the latter groups became more homogeneous and clearly defined. The divergence of the hysterical from the manic-depressive type of reaction leads to the view that these two disorders rest on constitutional anomalies of fundamentally different nature. Alzheimer considers that in the endogenous psychoses, as in the "organic" psychoses, the aim is to establish clearly defined disease-types; the means which have proved so efficient in the study of the "organic" psychoses—neurological technique, histopathology, serological methods—furnish little help in the endogenous psychoses. As to the latter, the author suggests that the further elaboration of the above-mentioned methods may bring light into the darkness. He does not mention the possibility that there may be other principles of explanation than those used in the study of the organic psychoses, principles, however, of equal validity in their own sphere.

C. MACFIE CAMPBELL.

**THE DIAGNOSTIC VALUE OF THE CEREBRO-SPINAL FLUID
(464) IN PSYCHIATRY.** (Beitrage zur diagnostischen Verwertung
der cerebro-spinalen Flussigkeit in der Psychiatrie.) HUGO
RICHTER, *Ztschr. f. d. ges. Neurol. und Psychiat.*, Bd. I., H. 3,
1910, S. 318.

IN this paper the author describes the examination of the cerebro-spinal fluid with regard to the protein content in 250 cases of mental disease. The first part of the communication is taken up by a description of the technique adopted. The patients were punctured in the sitting position, between the third and fourth lumbar vertebræ with a needle of a diameter of less than 1 mm. He considers that the estimation of the intra-cerebro-spinal pressure by means of a manometer is not an accurate method, owing to the frequency of error in technique. The patients' backs were cleaned by means of tincture of iodine. In a certain number of cases the patients suffered from headache, giddiness, and nausea, and in a very few instances from vomiting.

For the success of the qualitative and quantitative tests the cerebro-spinal fluid must be blood-free; it is not sufficient that the fluid looks perfectly clear, it should be tested chemically to see that there is no blood present.

The qualitative test of Nonne and Apelt, in which equal parts of 85 per cent. ammonium sulphate and cerebro-spinal fluid are added to one another was employed. He regards this test as being only positive when the precipitate appears at once.

The Ross-Jones test, with a saturated ammonium sulphate solution, he considers rather more delicate than the former method. The results obtained with both were practically the same.

For the estimation of albumin Nissl's quantitative test by means of Esbach's solution was used.

The qualitative reaction is not absolutely to be depended on for confirming or negating a diagnosis of general paralysis, as one case of general paralysis gave a negative reaction although twice examined, and in several instances a positive reaction was obtained in other psychoses. It must, however, be recognised that this test is a much more certain method than any other that can be employed for the diagnosis of general paralysis. If we consider that loss of the light reflex is only obtained in 60 per cent. of cases, the value of this test is evident, as it was obtained in 99 per cent. of the cases and in 90 per cent. it was very markedly positive. This test should be of great use in the detection of early cases of general paralysis when there are no clinical signs to help us, and may confirm the diagnosis of general paralysis when the condition has been detected by the physical phenomena.

In cerebral syphilis the reaction is faintly positive. Functional psychoses yield almost entirely negative results. The quantitative test is of value only when employed along with the qualitative reaction. A strong qualitative and a weak quantitative reaction in the same case are very suggestive of general paralysis.

RAE GIBSON.

THE SIGNIFICANCE OF HEREDITY AND THE NEURO-INSANE (465) CONSTITUTION AS IMPORTANT FACTORS IN THE PRODUCTION OF MENTAL DISEASE, WITH AN EXAMINATION INTO THE HISTORY OF 100 CONSECUTIVE CASES. G. RUTHERFORD JEFFREY, *Journ. Ment. Sc.*, April 1910.

IN this paper three chief points are discussed:—(1) The importance of and the position held by heredity in mental disease. (2) The importance and significance of the so-called neuro-insane constitution in people the subjects of mental disease. (3) The presence of a direct cause which is held to be the actual cause of a special attack of mental disease.

With reference to the first point, it was found that in 55 per cent. there was a history of insanity or well-marked neurosis in the direct ancestors, and it was suggested as a possibility that the maternal heredity is stronger in the case of a female offspring and the paternal in the case of the male. The following quotation from Darwin's book on the "Origin of Species" perhaps adds some weight to the suggested probability. Darwin says: "It is a fact of some importance to us that peculiarities appearing in the males of our domestic breeds are often transmitted either exclusively or in a much greater degree to the males alone."

Looking more widely into the hereditary history, it was found that 71 per cent. came from bad stock, meaning that somewhere in the genealogical tree there was a mental flaw.

The second point of the paper discusses the so-called neuro-insane constitution—a constitution which may show itself in many different ways, and which is almost invariably the foundation-stone upon which practically all insanities are laid. It is pointed out that this special constitution, as well as being an inborn quality, probably the gift of a bad heredity, can be acquired if a person be exposed to adverse circumstances, etc., etc., and special stress is laid upon this point in the paper. The results of the statistics dealing with this second point are most striking, for evidence of this constitution was found in ninety-three cases out of a hundred.

In discussing the third point of the paper, it was found that in 84 per cent. of the cases there was a distinct cause attributable

to their mental attack. Thus in 43 per cent. it was overwork and worries, etc.; in 14 per cent. fright or shock; while in 16 per cent. it was alcohol. Persons, therefore, who present this well-marked neurotic constitution, and who are exposed to adverse circumstances, worries, anxieties, and so forth, are those who are apt to break down mentally. In 40 per cent. of the cases evidences of grave physical disease were found in the ancestry, which seems to support de Fursac's statement, that "All possible evidences of degeneration are observed among the antecedents and collateral relatives of the insane." AUTHOR'S ABSTRACT.

A CONTRIBUTION TO THE SUBJECT OF QUERULANT IN-
(466) SANITY. (Beitrag zur Lehre vom Querulantenwahn.) M.
 Löwy (of Marienbad), *Zentralbl. f. Nervenhk. u. Psychiat.*, 1910,
 Ht. 3.

A GOOD deal of attention has lately been given to that group of cases of delusional insanity where the individual with a real or fancied grievance allows it to dominate his thought and activity to a morbid extent. While Kraepelin looks upon these "querulants" as the most pure type of paranoia, frequently considered an intellectual disorder, Specht has emphasized the symptoms which many of these cases have in common with manic-depressive insanity, the typical affective psychosis. There is no doubt that certain "querulants" or "pseudo-querulants" are constitutionally very similar to cases of chronic mania; the central features of the personality in such cases are a morbid egotism and a certain aggressiveness. On the basis of this constitution and of actual friction with the environment, which inevitably arises, a paranoic state is apt to develop.

The author emphasizes the development of a "querulant" paranoic condition on the basis of another type of constitution, in relation to some real or fancied injustice. The constitution is that of the neuropathic, egocentric, and emotional individual with a tendency to lively emotions which are unusually persistent; the emotional constitution of such neuropathic individuals leads them to a powerful and persistent assertion of their claims, which becomes only the more vigorous on meeting resistance. An emotional experience in which the effect is not satisfactorily disposed of may become the permanent nucleus of the patient's future thought, feeling and action. The author gives cases to exemplify this condition; a certain occurrence or series of occurrences dominated the patient's whole thought, without there being any evidence of manic-depressive features. These cases belong to Wernicke's "circumscribed autopsychosis" on the basis of a morbidly dominant

idea. Bleuler has emphasized the importance for the development of such conditions of a certain type of constitution and of predisposing occurrences, the value of which has to be traced according to Freud's principles. Querulant conditions can also arise in dementia præcox, in general paralysis, and even in individuals not considered insane. The author's conclusions are :—

(1) There are true "querulants" not related to the manic-depressive insanity.

(2) The cases recorded by the author belong essentially to Wernicke's "circumscribed autopsychoses." An actual occurrence is the precipitating cause; the unsatisfied effect is the driving force.

(3) This type of querulant insanity is closely allied to the neuroses (*a*) on the ground of their affective constitution, (*b*) in the relation of the psychosis to the upsetting cause, (*c*) in the fact that a hysterical Dämmerzustand may introduce the disorder.

(4) There are transition forms between the true querulants with their real or fancied injustice and the pseudo-querulant grumblers of paranoid constitution.

(5) In the transition forms the two factors—actual occurrence and psychopathic constitution—are also of importance, but in a varying degree.

C. MACFIE CAMPBELL.

DEPRESSIVE DELUSIONAL INSANITY. (*Der depressive Wahn-* (467) *sinn.*) O. REHM (of Leipzig-Dösen), *Zentralbl. f. Nervenhk. u. Psychiat.*, 1910, Ht. 2.

THE author gives two cases as examples of that form of insanity which he would designate "depressive Wahnsinn." He outlines the clinical picture as follows :—

The disorder arises in the presenile period, in individuals with good family and personal antecedents; as a rule no predisposing nor precipitating cause can be discovered; the onset is acute. The physical symptoms are as follows: signs of general arteriosclerosis, emaciation, unsteady gait, tremor of hands, narrow pupils with limited excursion, normal fundi, absence of chemical or cellular changes in the cerebro-spinal fluid, absence of reflex and sensory disorders.

The most prominent mental symptom is the depressed mood: towards the onset of convalescence variations with a tendency to euphoria may occur. The mood appears to depend on intensity of the hallucinations and the delusions; auditory hallucinations are prominent, rarely visual hallucinations. The auditory hallucinations are of threatening and persecutory nature, have great vividness, and become combined into almost delirious experiences.

The motor phenomena are varied ; agitation is prominent, but there also appear peculiar mannerisms and stereotyped movements ; negativism is not observed. As a rule the patient is clearly oriented. The duration of the disorder may vary from several months to years. The prognosis is not unfavourable, unless intercurrent diseases influence the course. The differential diagnosis from late catatonia is somewhat difficult ; in fact, many of the so-called cases of late catatonia probably belong to this group ; the author emphasizes the absence of negativism as the most important differential point. He further discusses the relation of the group to the melancholia of the involution period, and to cerebral arteriosclerosis.

C. MACFIE CAMPBELL.

PSYCHO-ANALYSIS IN A CASE OF AGITATED DEPRESSION.

(468) (*Psychoanalyse bei einer melancholischen Depression.*) A. MAEDER (of Zürich), *Zentralbl. f. Nervenhk. u. Psychiat.*, 1910, Ht. 2.

THE patient, a farmer of 42, had been depressed for a year ; he complained continually of loss of strength, of general languor, of inability to do his work ; he felt a terrible oppression in the chest, like a stone in his heart. He could not remain quiet but had to move to and fro ; his sleep was poor, disturbed by bad dreams ; the appetite was variable. He blamed himself as unworthy to be the head of a family. A psycho-analysis was undertaken during the course of four visits to the clinic, with the following result :— The patient had lived with a strict father-in-law, who dominated the whole household ; ever since the latter's removal to an asylum, owing to senility, the former had felt a certain lack of confidence in himself. He had never been a man of normal aggressiveness—he had been tyrannized by his father, his brother, and finally by his stepfather ; he had little inclination towards the other sex, derived more satisfaction from the fellowship of his own sex, married on rather conventional grounds. His somewhat feminine trend of mind had been sufficiently prominent to be commented on by others ; his interest in feminine tasks was rather striking. His dreams were rather of the feminine type.

The death of his young son was a severe blow to him. Always sexually frigid, for several years previous to treatment he had had no relations with his wife. The association test revealed a well-marked latent antagonism to his wife. The physician explained to the patient that the latter was essentially related to the homosexual trend in his constitution.

The result of the psycho-analysis was very striking ; the feeling of inner oppression disappeared completely, and the patient was

able to take up his work in an efficient manner. The physician encouraged him to cultivate external interests and some friendship which would allow free communication of his thoughts. A letter received from the patient five months after the analysis was extremely satisfactory in content. Symptomatically the case was one of involution melancholia, the close relation of which to manic-depressive insanity has recently been emphasized; the analysis showed the psychosis to be of psychogenic origin, the fundamentally disturbing factor being found in the sexual constitution of the individual.

C. MACFIE CAMPBELL.

TREATMENT.

ON THE SEDATIVE ACTION OF INTRA-ARACHNOIDAL INJECTIONS OF THE PHOSPHATE OF MAGNESIUM IN GRAVE CONDITIONS OF PSYCHOPATHIC AGITATION. (Sull'azione sedativa delle iniezione intrarachidee di fosfato di magnesio nella cura di gravi stati di agitazione psicopatica.) G. BELLISARI, *Riv. Ital. di Neuropatol.*, Vol. 3, Fasc. 1, 1910.

WITH the intra-arachnoid injections of the phosphate of magnesium the author obtains marked sedative effects of long duration. The injection is, however, at first followed by headache, vomiting and spinal pain. The author finds magnesium salts present in the cerebral spinal fluid many days after injection.

F. GOLLA.

ELECTRIC BATH TREATMENT IN 108 CASES OF MENTAL DISORDER, CONTROLLED BY WARM BATHS IN 16 CASES; AND THE RESULTS OF AN INQUIRY INTO THE INFLUENCE OF THE BATHS UPON THE EXCRETION OF CREATININE IN CERTAIN OF THESE. MACKENZIE WALLIS and E. GOODALL, *Journ. Ment. Sc.*, April 1910, p. 189.

THE form of current employed in this series of cases was that known as alternating and sinusoidal, in which the electrical current rises, not abruptly, but at a certain rate of progression, from zero to the maximum, falls again to zero, and flows in the opposite direction, the direction being altered several times a minute. Continuous current, obtained from the main or otherwise, is passed through a motor-transformer, rendered alternating, and thence through a sliding coil, whereby a low voltage (from 5-15 volts in the bath) is ensured.

Out of the 108 cases here dealt with, 62, or 57·4 per cent., recovered, or showed mental improvement (as evidenced by speech and conduct) in connection with, and, as we believe, largely in consequence of, the baths. Of these 62 cases, 28 recovered and 30 improved, so that they in many cases became useful members of the asylum community, and 4 were discharged relieved.

As regards the kinds of mental disorder, the bulk of the patients were cases of melancholia, or melancholia with stupor.

Of the 62 cases with favourable results, 39, or 63 per cent., were reduced generally as regards physical state, and 16 well-nourished; no statement as to this point is made in 7.

Of the 46 not improved, 20, or 43 per cent., were reduced, and 21 well-nourished; no record made as regards 5.

In the cases with favourable results, therefore, the physically reduced were more than twice as numerous as the well-nourished, whilst in the unfavourable as many were well-nourished on starting the baths as were reduced.

The great majority (80·6 per cent.) of cases which did well (recovered, improved) under this treatment gained weight, whilst 19·3 per cent. lost weight or remained stationary. Only one case which gave a recovery (as distinct from improvement) showed loss of weight.

Of the cases which did not improve under this treatment, 67·4 per cent. lost weight or remained stationary in weight, whilst 32·6 per cent. gained weight.

The amounts gained were not comparable with those noted in the cases which did well.

It is to be observed, as Dr Lewis Jones pointed out, that in electric bath treatment the patient's condition will often continue to show improvement after the baths have been left off.

It has further been remarked in some cases that a second course of baths, given after an interval of a few weeks, has been attended with better results than were obtained after the first course.

The observations made upon the excretion of creatinine in certain of these cases, and which are referred to below, indicate that the baths are best given in successive short series of about ten baths each, with intervals of about a fortnight between. We are now giving the baths in such series.

In 16 control cases simple warm baths at the same temperature as the electric baths, under the same conditions, and in the same number were given. The patients were of the same class in the two series, and no distinction was made as to diet.

The gain in weight was 5 lbs. or more in 30 per cent., as against 62 per cent. in the electric bath cases. 12·5 per cent.

showed improvement amongst the controls, as against 57·4 per cent. showing recovery or improvement amongst the electric bath cases.

The conclusion come to is that short courses of electric baths, of the kind described, constitute a useful means of treatment in cases of the kind above mentioned. They may advantageously be combined with measures such as Swedish movements and massage, though of course such combinations of treatment are not dealt with in this paper. Details of the cases treated are given at the close of this article in tabular form, under the headings, "Class of Case," "Weight Changes in connection with Baths," "Number of Baths," "Results as regards Mental Recovery or Improvement."

In conjunction with Mr Mackenzie Wallis, observations have been conducted from the purely scientific aspect, with a view to ascertaining the effect of the baths upon metabolism, as shown by the excretion of creatinine.

Mr Wallis gives an interesting historical survey of work done upon the estimation of creatinine, and then proceeds to detail his results in certain of Dr Goodall's cases, Folin's colorimetric method being employed. The general conclusions arrived at are as follows:—

(1) The excretion of creatinine in the insane is in general subnormal.

(2) Electric bath treatment, using the sinusoidal current, tends to increase the creatinine in the urine.

(3) Treatment with warm baths without the current has very little, if any, influence on the creatinine excreted.

(4) The variations in volume of the urine excreted, and the great proneness to bacterial decomposition, seem to be characteristic of the insane.

AUTHORS' ABSTRACT.

TRIGEMINAL NEURALGIA AND ITS TREATMENT BY ALCOHOL INJECTION. WILFRED HARRIS, *Brit. Med. Journ.*, June 11, 1910, p. 1404.

AFTER a short reference to the results of treatment of trigeminal neuralgia by excision of the Gasserian ganglion and by resection of the nerves, the writer briefly describes Schlösser's method of deep alcohol injection of the nerve-trunks at their deep foramina of exit from the skull, and gives his own results in 33 cases of the disease. Of these 33 cases, 31 were completely relieved of all pain for intervals varying from two months to twelve months and more. In several cases, especially the earlier ones treated, the injections were perineuritic, being followed by no anæsthesia, and yet complete disappearance of the pain may result. If the nerve

is properly injected, total anæsthesia is produced of the area of skin and mucous membrane supplied by the nerve, which persists for months, gradually diminishing until after a year or more it disappears completely, when the pain is liable to return. Usually the injections are performed without any general anæsthetic, the patient's sensations being then a valuable guide towards finding the nerve, but in certain cases of neuralgia of the third division the writer has succeeded better under chloroform in injecting the nerve at the foramen ovale, owing to the patients' want of self-control. For this branch of the nerve the bony landmarks are sufficiently distinct in most cases for the operator to feel the foramen ovale definitely with the needle, though this is not the case with the foramen rotundum, which should always, if possible, be done under local anæsthesia only. The writer always uses a sharp-pointed steel needle, $2\frac{1}{2}$ inches in length and .8 mm. outside diameter. No stilet is used to project beyond the point. 90 per cent. alcohol is used. In addition to tic douloureux, the same treatment may be successfully employed for post-influenzal supra-orbital neuralgia and other causes of brow ache.

AUTHOR'S ABSTRACT.

THE SURGICAL TREATMENT OF TRAUMATIC EPILEPSY. (Die (472) chirurgische Behandlung der traumatischen Epilepsie.)
TILMANN, *Arch. f. klin. Chir.*, Bd. 92, H. 2.

FROM a personal experience of 20 cases, and from an analysis of 267 cases recorded in the literature on this subject, the writer has found that in the vast majority of cases of traumatic epilepsy a definite intracranial lesion can be found. In 32 per cent. of the cases the lesion was situated in the bone, and in most of these it was a simple depression of the bone without any laceration of the dura. In 9.3 per cent. of cases the lesion was found in the dura, and consisted of adhesions or thickening of that membrane. In 38.4 per cent. of cases the arachnoid was the seat of the trouble, and here œdema, hæmorrhagic infiltration, angiomas or cysts were variously found.

In 6.7 per cent. of cases the pathological changes were found in the brain substance, which exhibited areas of softening or of sclerosis.

In 13 per cent. of cases no lesion was found. In only one of the writer's twenty cases, however, was no lesion discoverable.

Increased tension of the cerebro-spinal fluid was a very frequent finding at the operation, and the writer suggests that the impediment which this offers to the circulation in the cerebral cortex may

account for the generalised character which the symptoms so frequently assume.

Operation is to be strongly recommended in all cases of epilepsy where a localised injury to the head has been previously sustained. The injury may have been received ten or even twenty years before the epileptiform symptoms manifest themselves. The results of operation, in cases where a definite pathological lesion is found, are very good: 35 to 60 per cent. cured and 40 per cent. improved. Where no definite lesion is found little or no improvement follows a trephining operation. Experiments on animals have shown that the cicatrix left by a cranial operation never does produce epilepsy if the wound heal by first intention, but if the wound suppurate, epilepsy not uncommonly follows. It is very rare to find epileptiform symptoms follow cranial operations in the human subject, and if a definite lesion, cicatricial or other, be found and removed at operation in a case of epilepsy, freedom from recurrence of symptoms may be confidently looked for.

D. P. D. WILKIE.

Review

VOL. I. OF SURGERY OF THE BRAIN AND SPINAL CORD. By Professor FEDOR KRAUSE, M.D., Berlin; translated by Professor HERMAN A. HAUBOLD, M.D., Bellevue Hospital and New York University Medical College, U.S.A. London, H. K. Lewis, 1910, 25s.

PROFESSOR KRAUSE explains in his introduction to this very interesting and useful compilation that "he is not attempting to offer a text-book, but only to present numerous illustrations from nature, which are destined to constitute an accurate picture of the surgery of the brain and spinal cord, as it stands at this writing."

The large experience and high reputation that Professor Krause possesses in this department of surgery render the book under notice worthy of the attention of all surgeons interested in cerebral and spinal work.

Vol. I. is devoted to the surgery of the brain.

Professor Krause is in favour of the use of cutting forceps, and is very averse to the use of Gigli's saw in forming osteoplastic flaps. The dangers and disadvantages of Gigli's saw, which Professor Krause insists upon very forcibly, appear to us to be entirely imaginary. He lays no stress upon cutting the bone obliquely, so

as to prevent the flap falling below the level of the surrounding skull and exerting injurious pressure—a very real danger.

Professor Krause thinks “the removal of a glioma is of doubtful expediency.” This is not in accord with the general opinion, and certainly does not commend itself to us.

He wisely depreciates the division or ligature of large arterial trunks on account of the risk of degenerative changes resulting.

Professor Krause advocates the frontal approach to pituitary tumours rather than the temporal.

Chloroform without morphine is the anæsthetic preferred.

Professor Krause truly remarks that in the performance of Cushing’s sub-temporal decompression operation it is not always possible to sew up the divided temporal muscle and fascia over the bulging brain. We have found it very useful in these circumstances to make lateral incisions beyond the edge of the bone opening, parallel to the line of section of the fascia: this admits of the sewing up of the temporal fascia over the centre of the protruding brain.

Professor Krause favours the osteoplastic flap in cases of decompression. It has always appeared to us to be of no service, where the tumour is not removable and where the bony flap rides up considerably above the level of the surrounding skull. We believe it is not worth the time or trouble spent in making it.

He also advocates the crude and rough method of forcibly breaking through the base of the bony flap, instead of dividing it with a Gigli saw, which can be very easily and safely done.

Professor Krause is of opinion that decompression in the cerebellar area has no effect in the way of relieving intracranial tension, the result of a tumour of the cerebrum above the tentorium. With this view we are in entire accordance.

With regard to the book as a literary production, it is certainly well turned out. The paper and printing are excellent, and the illustrations, if not always lifelike, are clear and well executed.

Viewed as a translation, while the style is frequently involved, the meaning of the author is for the most part clearly brought out.

But why, we must ask, in a book which is supposed to be translated into the English language, should the spelling be neither in accordance with the accepted orthographical canons, nor any respect be paid to the classical derivation of the words employed?

Such enormities as “woolen,” “hypophesis,” “sanguinous,” “lamina vitra,” “lusterless,” “menacingly,” “diagnosticate,” and a host of others, cannot be said to adorn a book which is, in most other respects, worthy of high commendation.

J. M. COTTERILL.

Notice of Meeting

THE annual meeting of the *International League against Epilepsy* will be held in Berlin on October 4 and 7, 1910, at 2 P.M., in the lecture theatre of the Psychiatric Clinic of Professor Doctor Ziehen.

Professor Tamburini (Rome) will act as president.

The business before the meeting consists mainly of the reception of the reports from the International Committees upon the work of the league in the different countries, with reference to the prevalence of epilepsy, the numbers of the existing institutions for epileptics, etc. Communications will also be received from Dr Veith (Berlin) upon epilepsy and crime, and from Dr Muskens (Amsterdam) upon the patho-physiology of epilepsy. A complete programme will be issued later on.

BOOKS AND PAMPHLETS RECEIVED.

- Bulletin of the Ontario Hospitals for the Insane*, April, 1910.
- Forbes Winslow. "The Suggestive Power of Hypnotism." London: Rebman, Ltd., 1910. 1s.
- Marinesco et Goldstein. "Sur l'architectonie de l'écorce temporale et son rapport avec l'audition" (*L'Encéphale*, No. 5, 1910).
- Padoa. "Contribution à l'étude des Séquelles éloignées des méningites" (*L'Encéphale*, No. 5, 1910).
- C. J. Robertson Milne. "Clinical Report of the Berhampore Asylum for the year 1909" (*Indian Med. Gaz.*, May 1910).
- J. Mitchell Clarke. "On Recurrent Motor Paralysis in Migraine" (*Brit. Med. Journ.*, June 25, 1910).
- Shuttleworth and Potts. "Mentally Deficient Children; their Treatment and Training." Third Edition. London: H. K. Lewis, 1910. 5s.
- "Klinik für psychische und nervöse Krankheiten," Bd. V., H. 2.
- Tom A. Williams. "Nursing for the Neurologist" (*Trained Nurse and Hospital Review*, June 1910).
- Löwy. "Stereotype 'pseudokatatone' Bewegungen bei leichtester Bewusstseinsstörung (im 'hysterischen' Ausnahmszustande)" (*Ztschr. f. d. ges. Neurol. u. Psychiat.*, Bd. 1, H. 3).
- "Enzyklopädisches Handbuch der Heilpädagogik." Lieferung 6. Halle: Marhold, 1910. M. 3.
- Aldren Turner. "Three Lectures in Epilepsy." Edinburgh: J. F. Mackenzie, 1910. 3s. 6d.

Review of Neurology and Psychiatry

Original Articles

A CASE OF ACUTE HÆMORRHAGIC MENINGITIS DUE TO ANTHRAX.

By ALEXANDER BRUCE, M.D., F.R.C.P.E.,
Physician to the Royal Infirmary, Edinburgh; and
THEODORE SHENNAN, M.D.,
Pathologist to the Royal Infirmary, Edinburgh.

(With Plates 16 and 17.)

THE direct invasion of the lepto-meninges of the brain and spinal cord in man by the anthrax bacillus is apparently of comparatively rare occurrence. The description of the hæmorrhagic form of meningitis, which seems to be the principal consequence of such an invasion, has hardly found its way even into the recent text-books of medicine and of neurology. The possibility of its occurrence may therefore not suggest itself to the physician who has to deal with the early stages of the cutaneous infection, which may appear to be of little consequence, at the only time, therefore, when treatment is likely to be of service in saving the patient's life. This fact, the dramatic rapidity with which the disease develops, the striking character of its symptoms, and the valuable aid to diagnosis that may be rendered by lumbar puncture, seem to us to warrant the publication of the following case.

The clinical account is abstracted from the notes of the case made by Dr M'Queen, the acting Resident Physician to one of us (A. B.):

J. H. aged 46, a warehouseman, was admitted to the Royal Edinburgh Infirmary under care of one of us (A. B.) on 16th April 1910, in a condition of complete unconsciousness, with convulsions, great cedema of both eyelids, and a history of suppression of urine of four days' duration.

The history of the illness, as obtained from the patient's wife, is as follows:

On 12th April it was noted that the upper lid of the patient's left eye was red and inflamed. He went to work on the following day, but on his return in the evening the left eyelid was now so greatly swollen that he could not open his eye.

On 14th April he went to work, but was compelled to return home by a severe headache and a general aching all over his body. On the morning of that day he had applied a poultice made from a powder obtained from a herbalist (this was subsequently ascertained to be composed of the slippery elm). The poultice raised a large blister over the upper eyelid. On 15th April the temperature was found by the patient's physician, Dr Craig, to be 99° F. The left eyelid was swollen and cedematous, with an ulcerated surface. The lids could not be separated. The mental condition was normal.

On 16th April, about 5 A.M., the patient became delirious, and shortly afterwards became unconscious. About 10.30 A.M., when seen by Dr Craig, he was throwing his arms about wildly in an irregular manner. His removal to the Infirmary was recommended. About 11.30, when admitted there, he was unconscious, breathing in a very noisy manner. His lower limbs were at times convulsed, at other times perfectly rigid, and no reflexes could be elicited. His arms would become rigidly extended, with the forearm pronated, the hands clenched, and their dorsal surfaces turned towards the trunk. The convulsions were so violent that the patient, while being conveyed to the ward on a trolley, was more than once almost thrown off it. After being put to bed he had to be held to prevent him falling out of it. The convulsions occurred in rapid succession. In addition to the spasms above described as affecting the limbs, there were also quite irregular movements of the trunk of a very

violent nature. Sometimes the spine was arched in opisthotonus, sometimes moved to one or other side. The eyelids were very œdematous. The right eye could be opened slightly, and its pupil was moderately dilated and reacted to light. The left eyelid was not only œdematous, but was hard and brawny. On the upper lid and adjacent portion of the forehead there was a large red and inflamed area, with several vesicles or bullæ containing serous fluid. Round this inflamed area the infiltrated tissue had a livid colour, which became gradually fainter towards the hairy scalp.

The convulsions were of so violent a nature that a few whiffs of chloroform were given. These calmed the patient for the time being completely. The character of the convulsions recalled those described and figured in this *Review* (Vol. vi., p. 449) in rupture of an aneurism of a cerebral artery into the leptomeninges. As the possibility of the case being of a similar nature suggested itself, lumbar puncture was performed, and about 20 c.cm. of deeply blood-stained cerebro-spinal fluid were withdrawn under considerable tension. (This fluid contained an obviously much smaller proportion of blood than that obtained from the ruptured aneurism referred to.)

The ophthalmoscopic examination of the right disc, made by Dr George Mackay, showed no actual optic neuritis, but the edges of the disc were blurred and the veins very much engorged. There was no sign of hæmorrhage into the retina. Dr Mackay suggested the possibility that the condition might be due to anthrax. This was confirmed by the examination of the cerebro-spinal fluid, which was immediately centrifuged and found to contain blood and copious anthrax bacilli (see Fig. 1, Plate 16). Dr Shennan obtained fluid from the vesicles on the eye for purposes of culture (see p. 524).

The bladder was apparently empty, and a red rubber catheter was passed, about an ounce of slightly turbid urine being obtained. This had a specific gravity of 1030 and contained a small amount of albumen. The patient now lay quite flaccid. He breathed very noisily and vomited some black-looking fluid.

At 3 P.M. he had another convulsive seizure similar to those present on admission. The hands again assumed the same peculiar back-to-back attitude and slight opisthotonus was

present. At 4.55 the temperature had risen to 103.4, the pulse to 140, and the respirations to 32. The latter had the same noisy, stertorous character, with gurgling in the throat. The face was deeply cyanosed, the body sweating profusely. The limbs were quite flaccid; the chest was full of gurgling rhonchi, which concealed the heart sounds. At 5.15 the patient suddenly collapsed, a small quantity of dark fluid welling out from his mouth and nostrils before he stopped breathing.

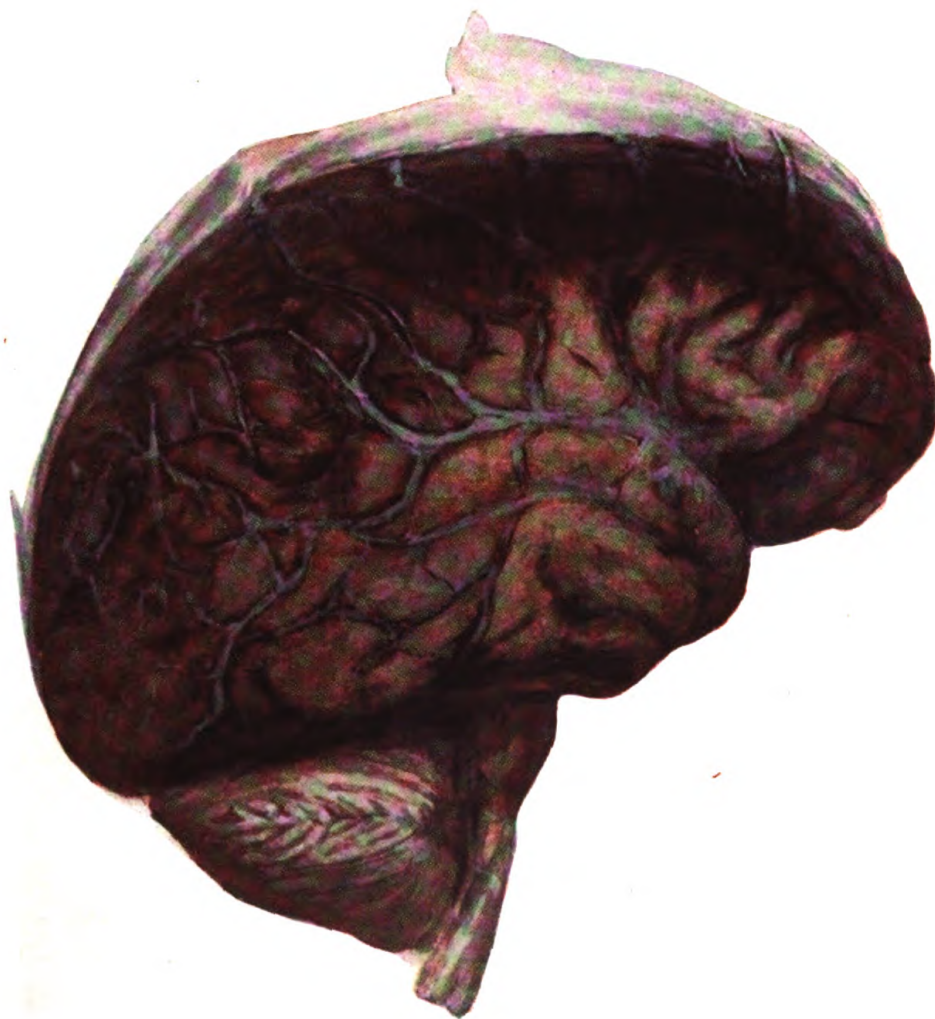
Previous to the fatal illness the patient had been a strong and healthy man, temperate in his habits as regards tobacco and alcohol. He had been employed for eighteen years as a packer in a warehouse. His duty was to pack blankets and bales of tweed cloth. All the articles that he handled were manufactured, and on no occasion did he have to work with raw material. No similar case has ever been recorded among the employees of the firm. A few days before the beginning of the illness his cap was blown off his head along the street. This was suggested by one member of his family as a possible source of the infection—a fact which is stated for what it is worth.

DR SHENNAN'S REPORT.

The outstanding feature of the case was the extremely firm oedematous swelling of the eyelids, side of the face, and upper part of the neck on the left side. On the upper eyelid there were large vesicles full of clear watery fluid. No bacilli were found in films made from this. Underneath the vesicles there were small yellowish necrotic areas. Films made from these contained a few Gram-positive bacilli, singly or in short chains of two or three members. They corresponded morphologically to anthrax bacilli. In many cases they were swollen, degenerated, and retained the stain badly. On cultivation, typical anthrax colonies developed, accompanied by numerous colonies of staphylococcus albus, as well as some saprophytic bacilli.

The post-mortem examination was conducted forty-two hours after death. The body was that of a well-developed, well-nourished, muscular man. The face and the dependent parts of the body were livid, and post-mortem rigidity was much more marked than usual, very great force being required to straighten the upper extremities.

PLATE XVI.



To illustrate Paper by Drs Bruce and Shennan.

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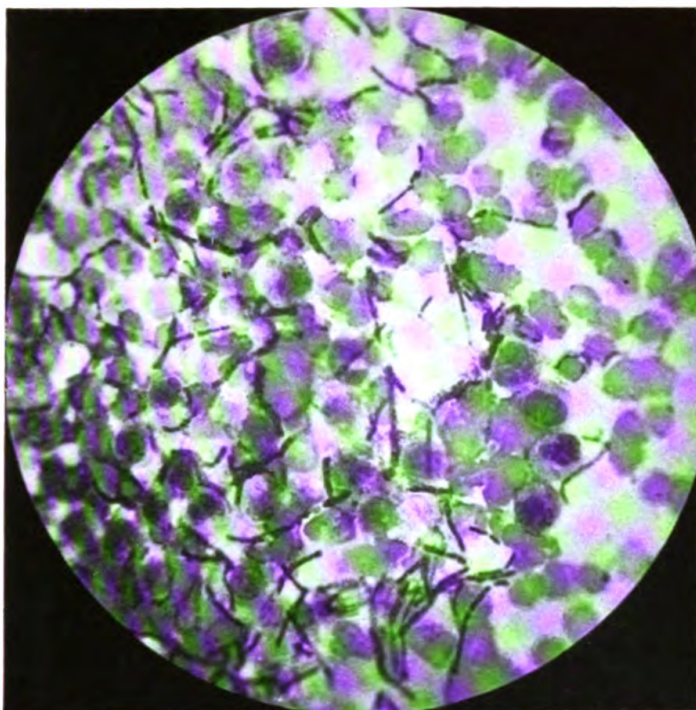


FIG. 1.—Cerebro-spinal fluid withdrawn by lumbar puncture, showing numerous anthrax bacilli and blood corpuscles.

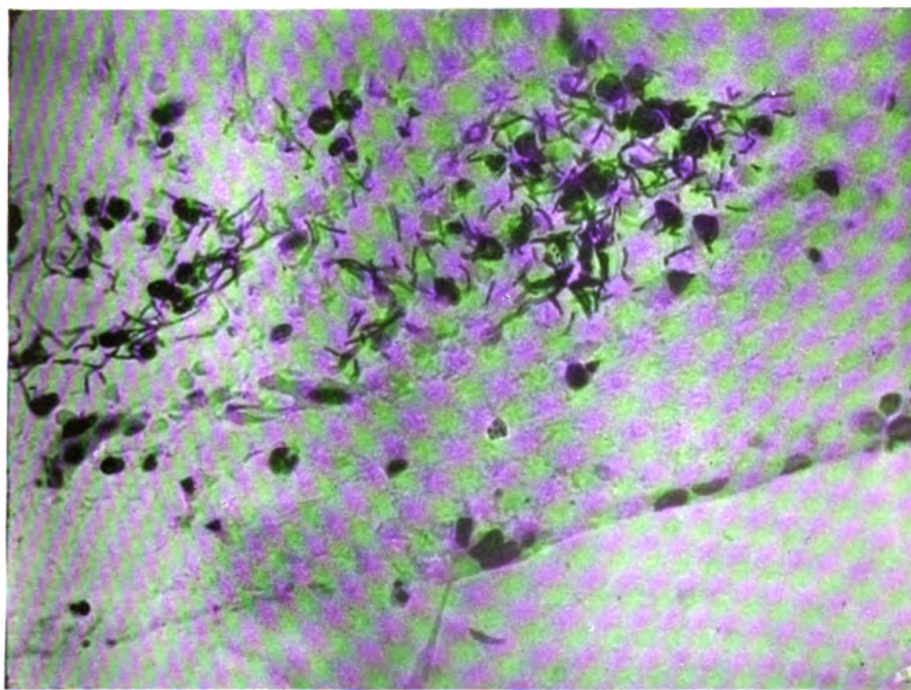


FIG. 2.—Anthrax bacilli in sheath of optic nerve.

To illustrate Paper by Drs Bruce and Shennan.

1

A CASE OF ACUTE HÆMORRHAGIC MENINGITIS 525

The head was first examined. The scalp was somewhat œdematous, particularly anteriorly and upon the right side of the head. The *diplœe* was full of blood; the *dura mater* was tense, and was of a purplish colour throughout, from the presence of hæmorrhage underneath. On reflecting the *dura mater*, the *cerebrum* appeared to be hidden by a uniform layer of blood, of which practically none lay between the *dura* and *arachnoid*. It was almost wholly limited to the sub-*arachnoid* spaces. The convolutions over the vertex were completely concealed by a thick, purplish mantle of hæmorrhagic effusion, and as one passed downwards upon the lateral aspects the thickness became less, so that the summits of the convolutions became visible, covered with deeply congested *lepto-meninges*. On the base of the brain the congestion was still very marked, and there was evidently hæmorrhagic effusion in the sulci. This also extended over the mesial surface. The *pia-arachnoid* was readily separable from the cortex, which appeared comparatively normal. All the large veins on the surface were thrombosed. There was comparatively little effusion over the *cerebellum*, *pons*, and *medulla*. The general appearance presented by the brain is shown by Plate 16, made from a water-colour sketch.

Thorax.—The *pleural* cavities contained no excess of fluid. The *lungs* were deeply congested throughout, and in the lower lobes in addition there were multiple hæmorrhages. The *bronchi* contained blood-stained mucus. In the right upper lobe there was, in addition, early broncho-pneumonia. The *pericardium* contained no excess of fluid. The right ventricle was dilated, and there was marked fatty infiltration of its walls. There was no important pathological change in the valves on the right side, or in the auricles. The mitral valve was thickened, evidently from old endocarditis, and there were small hæmorrhages into its outer segment. The papillary muscles on the left side were small, and numerous superficial sub-endocardial hæmorrhages were seen upon them, and also upon the *septum ventriculorum*. The *myocardium* of the left ventricle was pale, particularly near its inner surface, and somewhat flabby. Microscopically it showed fragmentation and granularity of the muscle fibres.

The *liver* showed very marked acute venous congestion and distinct evidence of cloudy swelling.

The *spleen* was of about normal size, extremely soft and diffuent.

The left kidney was deeply congested, showed marked recent parenchymatous changes, and evidence of slight old interstitial changes.

Cultures were made from the heart-blood, but no anthrax colonies developed. Tubes were inoculated from the spleen and meningeal exudate, and, after twenty-four hours' incubation, showed typical colonies of anthrax bacillus, these being few in number in the case of the spleen. Also tubes were inoculated from the cerebro-spinal fluid, and, although microscopically this was crowded with bacilli, they remained sterile. This anomalous result was possibly due to an insufficient alkalinity of the medium.

Rats inoculated at the root of the tail with the cultures derived from the spleen died within thirty-six hours. The culture apparently soon lost its virulence, as the second sub-culture, on inoculation into a rat, failed to cause death.

Other cultural characters of the organisms corresponded with those of the anthrax bacillus.

Microscopical Examination.—A segment of the left upper eyelid was removed, about 1 cm. in thickness, and comprising the tissues superficial to the tarsal cartilage. On microscopic examination numerous vesicles, which had contained fluid, but now contained only a few polymorphs, some threads of fibrin and scanty scattered bacilli, were found in the epithelial layer and also separating this from the corium. The subjacent tissues were infiltrated and separated up by fibrinous exudate and large collections of polymorphs. The latter were aggregated chiefly round about the blood vessels. The fibres of the orbicularis also were widely separated by similar exudate and for the most part were undergoing necrotic changes. The walls of some of the arterioles were hyaline. Very few bacilli were found in the subcutaneous tissues. The contents of the orbit were sectioned in a coronal plane, posterior to the globe, so that the optic nerve was cut transversely. No pathological changes of importance could be distinguished in the optic nerve itself, although in some of the other smaller nerves of the orbit some of the axis cylinders appeared to be swollen. In the lymphatic sheath of the optic nerve numerous anthrax bacilli were found, sometimes occurring in large clusters, as shown in the photomicrograph (Plate 17, Fig. 2).

The external and internal recti were also cut in this section, but, except for some patchy vitreous degeneration of their fibres, there was little of importance to note. One or two of the ciliary arterioles lying between the lateral recti and the optic nerve contained small thrombi, and several veins at some distance from the optic nerve were thrombosed and contained a very few scattered bacilli.

Cerebral Meninges.—Sections were made from the tip of the right temporo-sphenoidal lobe. The membranes were extensively infiltrated with blood which had evidently escaped from the venules, the walls of which were in some cases ruptured and showed distinct degenerative changes. The extravasation also contained a considerable number of polymorphs, but these were not in excessive amount. It was also crowded with bacilli which frequently formed felted clumps. In only a few cases were bacilli found within the blood vessels, the rule being that they occurred in the lymphatics of the adventitia of the vessels, and within the membranes. In the case of vessels passing into the cortex the lymphatic sheath was filled up with exudate, partly fibrinous, but chiefly cellular, and here there was also evidence of endothelial proliferation.

Spinal Cord.—The lepto-meninges were moderately infiltrated with blood. On section the pia mater showed the presence of anthrax bacilli. These had penetrated into the cord itself to a slight extent. In all the sections that were examined the bacilli that were found within the cord were situated in the adventitial sheaths of the blood vessels. There were none either in the so-called perivascular lymphatic or in the interior of the vessels themselves.

The Thorax. Lungs.—The alveoli were for the most part filled up with blood. Closely clustered and also diffusely scattered Gram-positive bacteria were found, principally cocci, morphologically like the pneumococcus, but also very numerous bacilli morphologically identical with the anthrax bacilli found in other lesions elsewhere. In addition, in some parts, there was evidence of bronchiolitis and early broncho-pneumonia.

The Heart.—A few scattered bacilli were found lying against the endothelium covering the papillary muscles, but possibly these had been deposited in that position from the fixing fluid, other tissues having been fixed along with the portions of heart

wall. There was fragmentation of the heart-muscle, but it is to be noted that rigor mortis was extreme, probably accounting for this appearance.

The Liver.—Apart from cloudy swelling, the liver showed few other important pathological changes, and no organisms were detected.

The *Spleen* showed the characters of acute congestion. The intima of the arterioles was hyaline in most cases. The Malpighian bodies contained many large cells with a single vesicular nucleus and finely granular protoplasm, staining a blue-grey colour with thionin. These were sometimes in mitosis. Plasma cells were also present. The pulp was infiltrated throughout with blood, and a considerable number of bacilli were found in twos and threes, especially in the vicinity of the trabeculæ.

The *Kidneys* showed very marked acute catarrhal nephritis with granular necrotic changes in the epithelium of the secreting tubules. In many cases the epithelium of the collecting tubules was also catarrhal. There was extreme congestion of the glomeruli, this evidently being in part a pre-existing condition, to judge from the thickening present in the walls of the capillaries.

Sections of the hæmorrhagic areas in the walls of the *Stomach* showed that the hæmorrhage had occurred principally in the mucous membrane, in the interglandular connective tissue. There was marked catarrh in the glands.

Similar patches in the *Small Intestine* showed extensive catarrhal necrotic changes in the epithelium, and a thick layer of hæmorrhage in the sub-mucous coat. In the blood vessels near this, especially the venules, thrombosis was evident.

The *Rib Marrow* showed evidence of slight leucoblastic reaction, but the *Femoral Marrow* showed very little indication of any reactive change. A few bacilli, apparently degenerating, were found in the rib marrow.

A considerable number of cases of hæmorrhagic leptomeningitis, caused by the anthrax bacillus, have been recorded. Most of these are referred to here.

E. Wagner (1) records seven cases of anthrax infection, in three of which the central nervous system was affected. In one case the pia-arachnoid was uniformly red, and in parts infiltrated with blood. Infection had evidently taken place by way of the

intestinal tract. In another case the lepto-meninges were uniformly infiltrated with blood. There were many hæmorrhagic points throughout the cerebral cortex and a few also in the cerebellum. The illness began with a malignant pustule at the angle of the lower jaw on the right side. There were also a few hæmorrhagic points in the intestine, and the mesenteric glands were swollen and slightly hæmorrhagic. Infection had evidently taken place primarily through the skin. In a third case, small ecchymoses were found in the pia mater of the cerebrum. Infection had taken place through the skin, and secondarily by way of the intestine.

In the fatal cases of wool-sorters' disease investigated at Bradford, Greenfield (2) found that the brain was usually healthy, and, less frequently, ecchymoses or extensive hæmorrhages were present in the meninges.

Bryant and Mahomed (3) reported the case of a male, aged 33, came into hospital with a malignant pustule on the left cheek, and great swelling on the corresponding side of the neck. In spite of excision of the pustule, he died. In the brain a few small patches of blood-staining were found, especially on the lateral surface of the right hemisphere. The lungs contained numerous dark-red nodules which were crowded with anthrax bacilli. Numerous small malignant pustules were found in the intestine, and also two distinct necrotic areas in the stomach. In this case there was apparently primary cutaneous infection, with secondary infection through the alimentary tract.

Poland (4) gives the case of a bargeman, aged 23, who was infected while landing dry goatskins from his barge. He died on the fourth day of illness. The brain showed extensive sub-arachnoid hæmorrhage, extending almost universally over the surface, and dipping down into the sulci. The spinal cord showed similar changes. The lungs showed numerous infarcts, and there was engorgement of the bronchial glands with hæmorrhagic extravasation into their substance. Sloughing necrotic patches were found in the stomach and upper part of the intestine. Infection had taken place either through the respiratory tract or through the alimentary tract.

Curschmann (5) describes a case of hæmorrhagic lepto-meningitis in which the channel of infection was doubtful. The meninges were congested, contained numerous hæmorrhages, and

were very easily stripped off the brain. Small hæmorrhages were also found in the cortex of the brain and in the cerebellum. The blood vessels were crammed with bacilli.

Paltauf (6) describes two cases in which hæmorrhagic leptomeningitis occurred following anthrax infection. Both patients were rag-pickers, and in the first case, a female, aged 29, infection had taken place by way of the respiratory tract. Great numbers of bacilli were found in the hæmorrhagic exudate, but only a few scattered bacilli were found within the blood vessels.

The other case, a male, aged 40, developed a malignant pustule on the left cheek. At the post-mortem examination numerous necrotic and hæmorrhagic spots were found on the inner surface of the small intestine and also in the cœcum. The hæmorrhagic extravasation in the pia-arachnoid reached a thickness of 3 mm. and had the appearance of freshly clotted blood. On making cultivations, only a few colonies of the anthrax bacillus developed.

Merkel (7) records the case of a male, aged 22, who died shortly after admission to hospital. He had been ailing for three or four days and was brought to the hospital unconscious. The pia mater was deeply congested, the sulci filled up with gelatinous material, and the convolutions flattened. Numerous hæmorrhages were found in the cortex. Most of the blood vessels were crowded with bacilli, but a large number of these were found also outside the vessel walls. In this case the primary infection had taken place probably by way of the air passages. There were hæmorrhagic erosions in the stomach, so that the possibility of an alimentary infection cannot be excluded.

Lucas (8) records a fatal case of anthrax involving the brain. The patient had handled bales, and on the following day had noted the presence of a pimple on the side of the neck. There was no itching. A typical malignant pustule developed. It was excised, but the patient died next day. At the post-mortem examination the pia mater, including the velum interpositum, was intensely congested, and there were numerous hæmorrhages beneath the arachnoid mater, the largest being of the size of a crown piece. There were no hæmorrhages into the lungs. The primary infection had evidently taken place through the skin.

Goldschmidt (9) records the case of a young paint-brush maker who died after two days' illness. There was great œdema

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of the right side of the neck, the subcutaneous tissue being infiltrated with blood and swollen. He found effusion of blood into the pleural and abdominal cavities, ecchymoses over the pleural surfaces, œdema of the lungs, and numerous hæmorrhage infiltrations with central necrosis in duodenum, ileum, and ascending colon. Covering both hemispheres there was a mantle-like, firm effusion of blood. There were small hæmorrhages into the cerebral substance.

Drozda (10) gives the details of two cases of human anthrax, in which there was great infiltration of the meninges with blood, accompanied in one case by hæmorrhage into the basal ganglia. Infection took place in both cases through the respiratory passages.

Hitzig (11) reports the case of a butcher who died of anthrax after five days' illness. Media were inoculated from different organs and tissues, but only out of the cerebro-spinal fluid were pure cultures of the organisms obtained. On the third day of the illness seven malignant pustules appeared upon the left fore-arm. Next day the right fore-arm became reddened and cedematous.

The pia mater of the brain and spinal cord was deeply injected, soft, and very œdematous posteriorly. Numerous small ecchymoses were observed along the vessels and also in the basal ganglia.

Bacilli were found thickly deposited outside the blood vessels, never in their lumens.

Poelchau (12), in a case which died from internal anthrax, found slight opacity of the arachno-pia over the cerebrum, but over the cerebellum the meninges were infiltrated with blood on both upper and under surfaces. There was great œdema of the mediastinum, and numerous necrotic areas with surrounding hæmorrhagic zones were found on the mucous membrane of the stomach.

Völckers (13) reports a case in which a patient, who had been working with furs, developed an itchy spot on the right lower eyelid. Next day the swelling increased, and he was sent to hospital as a case of erysipelas. The swelling extended to the right side of the face and neck, and the mucous membrane of the naso-pharynx and the soft palate were also affected. At the post-mortem examination nodules were found in the

mucous membrane of the stomach. The meninges were full of sero-hæmorrhagic effusion. In this case there had been probably direct extension to the cavernous sinus, which was thrombosed.

Fraenkel (14) demonstrated a brain from a case of meningeal anthrax, in which the red blood corpuscles were hæmolysed—this is also mentioned by Bell (21)—and in which the anthrax bacilli extended along the sheath of the blood vessels within the cortex, none of the bacilli having penetrated to the lumen of the vessels.

Risel (15) reports in full detail a case of anthrax of the nose and brain. At the post-mortem examination diffuse hæmorrhagic lepto-meningitis of the brain and spinal cord was found. The infection had evidently spread from the nose by way of the perineural lymphatic sheaths of the olfactory nerves. He found multiple capillary hæmorrhages in the cortex of the cerebrum, in the basal ganglia, and in the spinal cord. Anthrax foci were found also in the mucous membrane of the small intestines.

Schmorl (16), in the course of the discussion upon Risel's paper, gives the details of a case in which diffuse hæmorrhagic infiltration of the cerebral meninges proved fatal. The primary lesion was a malignant carbuncle on the fore-arm.

Fraenkel (17) further gives the case of a man who had a small pustule on the right side of the neck, with subsequent development of great cyanosis of the face and ears, and swelling of the side of the neck and larynx. At the post-mortem examination the pia arachnoid was œdematous and reddened, and infiltrated to a remarkable extent with blood. Hæmorrhages were also found in the grey matter. The lumens of the cerebral vessels were free from bacteria, but these crowded the lymphatic sheaths, so as to form blue rings surrounding the vessels in stained microscopic sections.

Ziemke (18) reports the case of a female, whose husband had worked for about twenty years at sorting hides. She became suddenly seriously ill. On the left cheek she developed a typical malignant pustule, accompanied by regional swelling of the lymphatic glands. At the post-mortem examination the lepto-meninges were full of blood, both on the convexity and over the base of the brain, so that the subjacent convolutions

were hidden. The effusion at parts was 0·5 cm. in thickness. A few bacilli were found in the vessels, and he thinks that these had evidently penetrated the blood vessels from the sub-arachnoid space, rather than *vice versa*.

In a case of pulmonary anthrax in a male, who was admitted into hospital comatose and died a few hours later, Kreissl (19) found irregular infiltration of the pia arachnoid with blood, and capillary hæmorrhages in the basal ganglia and ependyma. The ventricular system contained sero-hæmorrhagic fluid. The lungs were deeply congested, and showed hæmorrhagic areas and broncho-pneumonic foci. Anthrax bacilli were found in the pleural and ventricular fluids.

Krzyszowski (20), in a fatal case of rag-pickers' disease, found very extensive diffuse meningeal hæmorrhage, and scattered small extravasations in cerebral substance.

J. H. Bell (21, 25), who was one of the first to recognise the true nature of the wool-sorters' disease (32), which was comparatively common in Bradford in the late seventies and early eighties of last century, states that 22 per cent. of those who were attacked showed rambling of the mind and delirium. Five became comatose, and three—out of eighty-seven cases—had convulsions. In most of these he believed that hæmorrhage had occurred into the cerebral membranes.

Sturdy (22) describes a case of human anthrax in which extensive meningeal hæmorrhage was found at the post-mortem examination. On the second day of the illness a malignant pustule developed upon the side of the neck. This was excised, but on the following day the patient suddenly became blind, and complained of pains in the head. This was accompanied with vomiting. In half an hour he became unconscious and died the same evening.

In a case in which infection had apparently taken place by way of the intestine, Teacher (23) found, on post-mortem examination, an extensive diffuse pia-arachnoid hæmorrhage which presented features almost exactly similar to those of the case we have to describe. In the effusion there was no evidence of inflammatory reaction in the ordinary sense. The infection of the meninges had probably taken place by way of the bloodstream.

Marchand (29) records the case of a newly-born infant who

succumbed a few days after birth. The mother had been admitted to hospital in a moribund condition, and died of anthrax. The child remained apparently well for a few days and then died from the same disease, having been infected from the mother. At the post-mortem examination petechial hæmorrhages were found in the pia arachnoid.

Eppinger (30) did not find meningeal hæmorrhage in any of his series of eight cases of rag-pickers' disease—pulmonary anthrax.

Symmers and Wilson (31) report a case of cerebro-spinal meningitis, associated with the presence of the bacillus anthracis. The patient was a female, æt. 19, and had "worked hair." An intensely itchy papule formed near the roots of the hair, on the left side of the forehead. This developed into a large crater-like pustule, half an inch in diameter. There was pronounced œdema of the left side of the face, neck, and thorax. She died after six days' illness.

The brain, on removing the dura mater, "was of a brilliant but somewhat dusky red colour over almost its entire surface, as if it had been smoothly and thickly smeared with red paint." The spinal cord shows no evident hæmorrhages. A very plentiful growth of the *bacillus anthracis* was obtained from the cerebro-spinal fluid on culture media.

Method of spread or 'Channel by which the Anthrax Bacilli spread to the Meninges.—In the case of wool-sorters' disease Greenfield decided that extension took place by way of the lymphatics, and this appears to have been the commoner channel of spread in the above cases.

Eppinger (30) came to a similar conclusion in his investigation of rag-pickers' disease.

In the majority of cases in which the descriptions of the microscopical appearances are given, the bacilli were found to be in the lymphatics of the adventitia of the vessels or in the lymphoid sheath of the cerebral vessels. In only two cases were they found in great numbers within the vessels.

This lymphatic spread is seen also in other infections, and in discussing the infective diseases of the central nervous system Fraenkel (17) strongly supports the possibility of invasion, *e.g.* from the nose and pharynx by way of the lymphatics. Numerous other authors have advocated this explanation, especially in relation to meningitis

caused by the *influenza bacillus*, the *pneumococcus* and the *micrococcus meningitidis cerebro-spinalis*, but, while this is so, it is evident that in cases of pulmonary or intestinal anthrax the possibility of a spread by way of the blood-stream, either directly, as in the case of pulmonary anthrax, or through the intermedium of the lymphatics, as in the case of an intestinal infection, cannot be excluded.

Relationship of the Local Primary Lesion to the Severity of the Case.—It is difficult to dogmatise with regard to this point, but, speaking generally, one may assume that when a cutaneous lesion shows the characters of a typical malignant pustule and is unaccompanied by great œdema and swelling, the likelihood of a general infection taking place, with a fatal result, is diminished, and the prognosis is still better if the primary lesion develop on the extremities, in the nape of the neck, or in parts which are made up of fairly dense tissue in which swelling cannot readily take place; whereas if the local cutaneous lesion, even though a typical pustule be formed, be situated on a surface over comparatively loose or extremely loose areolar tissue, the tendency to the occurrence of œdematous swelling increases, and at the same time this is more favourable to the spread of the infection, so that general dissemination results more readily.

If a local lesion is specially characterised by swelling, congestion, and œdema, and if a local well-formed malignant pustule do not develop, as, *e.g.*, on the eyelids, on the cheeks, on the lips, or in other soft parts of the body—Goldschmidt (9), Völckers (13), Schütte (24), Fraenkel (17), Bell (25)—the case usually becomes serious at an early stage and a fatal result frequently ensues. This is the case also where infection takes place through the respiratory tract, and to a somewhat lesser degree in cases of intestinal infection, but even in these cases of extensive œdematous swelling without typical pustule formation recovery can take place, as is evident from cases reported by Moreau (26, lower eyelid); Bell (21) and Greenfield (pulmonary anthrax); Davies Colley (27) and Morestin (28), (lower lip); so that, as already said, it is not always possible to dogmatise upon this point as to the nature of the local lesion and its relation to the severity of the case.

To judge from the nature of the above cases taken from the literature, and many others to which reference has not been

made, owing to the fact that the meninges were not affected, most—whatever the degree of severity—must have been infected with the spores of the bacillus, so that they give no support to those who argue that the severity of the infection depends upon the form of the bacillus, whether vegetative or sporing, which has brought it about.

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A CASE RESEMBLING MYASTHENIA GRAVIS, WITH PECULIAR CHANGES IN THE NERVOUS SYSTEM.

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(With Plates 18, 19, and 20.)

THE following case, which clinically presented many of the features characteristic of myasthenia gravis, is published because of the remarkable condition of the post-mortem appearances. These were not only a departure from what is more usually found in myasthenia, but were in themselves of a most exceptional nature. J. H., aged 54, single, housekeeper, was first seen by one of us (A. B.), in consultation with Dr Angus Macdonald, in the beginning of December 1907, for muscular weakness, said to be of nine months' duration. The history of weakness apparently dated from an attack of influenza about the end of 1906, an attack which lasted ten days, but did not compel the patient to take to bed. Before this attack there was no definite history of any illness, but on being questioned the patient admitted having had very hard work, and at times feelings of exhaustion. In the beginning of March 1907, she noticed some weakness in the right foot while walking. The foot was put to the ground "with a flop." About the end of April she began to have some weakness in the ring and little fingers of the right hand. These felt numb and useless, and caused some awkwardness in doing fine work, such as using a needle, as they seemed to get in the way of the other fingers. This weakness gradually spread over the right hand, until by the end of July the hand was quite useless for any finer work,

except for a few minutes. She could adjust her dress, wash dishes, and do dusting work, but was quite unable to sew. There was great fatigue of the muscles, and the weakness was brought out and increased by continued effort. She could, for instance, sew a few stitches quite well, but on continuing the work the weakness came on and increased, making it impossible for her to go on. At the end of July 1907, she began to feel as if her tongue were too large for her mouth, and she sometimes felt as if she could hardly speak. As a rule she was able to speak fairly well in the morning, but as the day went on, if she spoke much, the tongue and lower lip felt tired, and speech became indistinct. In the end of August she began to have double vision at times. This was usually absent in the morning, but by the middle of the day and in the evening she saw everything double. This condition improved a great deal subsequently, but still occasionally recurred. In the end of September the ring and little fingers of the left hand began to feel weak, and by the end of October this weakness had affected the whole hand, so that the condition exactly resembled that of the right hand. A certain amount of tingling was complained of in both hands. In October the weakness of the legs increased, the left leg, however, being affected to a less extent than the right. As a rule the weakness was less in the morning, and became progressively worse as the day wore on. The weakness caused the legs to limp and drag; the knees tended to give way under her, and the legs appeared to get entangled with each other. In the end of October the back began to feel weak and tired. The weakness extended upwards from the small of the back. It caused her to walk with a stoop, and to feel that she required something to support the back. In the beginning of November she began to have difficulty in swallowing, solids especially. This was always worse in the later part of the day. Food frequently regurgitated from the nose, but she was always careful to prevent it escaping into the larynx. Since September there had been some difficulty in keeping the eyes open, a distinct ptosis becoming evident towards the later part of the day. There was no difficulty of breathing. During November she had passed the forenoon in bed, and during the rest of the day she had walked a little in her room or lain on a couch. She had been able to walk for a short time, but

almost immediately became so tired that she felt inclined to fall.

When admitted to hospital on December 7th, 1907, she was a healthy-looking, well-nourished woman, with no obvious morbid appearances beyond ptosis of both upper eyelids, more marked on the right side. She complained that this ptosis became more marked as the day went on. There was some impairment of the movements of the eyes. Lateral conjugate deviation to the right was fully carried out, but was badly sustained, and there was a tendency to nystagmoid movement. On attempting lateral movement to the left, the right eye moved fully to the left, but the left eye rolled upwards and downwards and showed slight nystagmoid movements. The upward movement of both eyes was very deficient; downward movement was well carried out. There was some inversion of the lower lid. No diplopia was complained of. The right pupil was slightly larger than the left. Both pupils reacted to light and accommodation. The voluntary movements of the face were easily exhausted. There was no actual paralysis of any muscle. The eyelids, when tightly shut, would be opened with the greatest ease by the finger. The tongue, when fully protruded, tended very soon to slip back again into the mouth. The voice became nasal on continued speaking. In the upper extremities the movements at the various joints could be fully carried out, but were extremely easily fatigued. The dynamometer measurements of the hand-grip were eight on the right and eleven on the left side. There was similar feebleness of the movements in the lower extremities, all the movements being easily exhausted. This exhaustion was so marked that the patient could not get into bed without assistance. There was apparently no weakness of the intercostal muscles. There was no sensory change.

Reflexes.—There was some difficulty in swallowing solid food, which had a slight tendency to stick in the throat. The other organic reflexes were unimpaired. The knee-jerks were slightly exaggerated on both sides. The Achilles jerk was not elicited (?). The deep reflexes in the upper extremity were present, but not active. The plantar responses were of the flexor type on both sides. The abdominal and epigastric reflexes were feeble.

Electrical examination of the muscles of the arms showed a fairly typical myasthenic reaction to the faradic current. Owing to the weak state of the patient, this could not be very fully tested

The appearances of the fundus of the eyes on ophthalmoscopic examination were normal. Sleep was good, and the memory and intelligence normal.

Circulatory System.—The pulse was 68, regular in time and force, of moderate tension, with rather small expansion. The apex beat was neither visible nor palpable. Percussion indicated that the left border of the heart was 5 inches from the mid-sternum, the right border $1\frac{1}{2}$ inches. On auscultation the first sound in the mitral and tricuspid areas was feebly heard; the second sound was relatively accentuated in all the areas.

On examination of the respiratory system nothing abnormal was ascertained. The alimentary system showed a poor appetite, furred tongue, and very constipated bowels. In the urinary system there was nothing abnormal.

After admission to hospital the patient's symptoms ran a somewhat varied course. At first she appeared to be slightly stronger, the ptosis was less marked, and the speech slightly stronger. A fortnight after admission there was slight regurgitation of fluid through the nose. On the following day (22nd December), while at tea, she suddenly found herself unable to swallow a piece of soft bread, or to cry out to attract attention. She could not raise her hand to her mouth to remove the bread, but at last, after a fit of severe choking, she managed to expel it. This accident caused much prostration. She could not sit up as she had previously been accustomed to do. For about a week after this occurrence she was fed entirely upon fluids and jellies, and had no trouble in swallowing. At the end of this time she had another attack of difficulty in swallowing liquids, which came on after she had walked to and from the bathroom and had a bath. After this time she was nourished by more consistent foods, such as porridge and jellies, but even then she had several slighter attacks of difficulty in swallowing coincident with the administration of small doses of castor-oil for her constipation. When the aperient was changed to cascara sagrada, the constipation was overcome without any symptoms of exhaustion.

Until the 16th of January 1908 there was a general improvement in her condition. On the evening of that day she was suddenly seized with severe cardiac weakness and dyspnoea. The pulse at first was quite imperceptible, but returned on the injection of ether hypodermically and the application of hot

fomentations over the heart. The breathing was very rapid, 50 per minute, and very shallow. The patient looked greatly collapsed, the face was grey, the heart sounds extremely weak, with a resemblance to the foetal rhythm. The pulse was 104. From this time the patient had to be fed by nutrient enemata. A cough began to be troublesome, with accumulation of secretion at the back of the throat and lower down, which she could not bring up because of weakness. The cough and attempts to vomit greatly exhausted her. The pulse and respiration became at times extremely feeble, the secretion in the throat being very free. Strychnine, strophanthus, and tincture of belladonna appeared to give slight relief. The patient breathed most comfortably when supported by a nurse or when leaning forward upon a table placed in front of her, over the bed.

On the 18th and 19th there were periods of quietness alternating with intervals of sickness and cough, the pulse being generally about 120. Slight relief was given to the cough and prostration by tincture of musk internally and the external application of mustard. At half-past two o'clock, after 2 oz. of champagne, the patient fell asleep and breathed more quietly. Suddenly, without warning, she gave a slight movement of the head, opened her mouth, and her pulse stopped. A slight flicker of pulse returned for a moment after the injection of ether and strychnine, and a hot fomentation over the heart. Respiration continued in the form of occasional gasps at longer and longer intervals for about two minutes after the heart had ceased beating.

Post-mortem Report by Dr Shennan, 20th Jan. 1908.

Injection marks in both arms, and also mammary discoloration where fluid had been injected. Considerable amount of subcutaneous fat. No pleural adhesions.

Heart.—On surface there is excess of epicardial fat; a moderate thickening of the epicardium, especially over the right auricle, which is dilated, and the pectinate muscles being separated from each other. Its muscle is markedly pale, and under the epicardium all over there are little yellow particles of fatty change. There is one very minute whitish spot above the septal cusp of the tricuspid valve. Pulmonary valve competent.

On opening right ventricle, muscle is dark in colour, but shows distinct fatty infiltration extending to the endocardium at parts. Nothing to note in left auricle. Aortic valve competent. Mitral cusps show small nodular thickenings at margin. Some of the chordæ are thickened. On section the myocardium is deeper in colour than usual, and in the substance of the muscle near the endocardium at base of the anterior papillary muscle there are two yellowish patches of fat, lying apparently in hollows between columnæ carneæ. Underneath the endocardium there are numerous petechial hæmorrhages. Right coronary artery distinctly atheromatous. Aortic cusps are thickened, and show yellowish atheromatous change. Superficial fatty change in aorta itself. Left coronary artery—atheroma and calcification, especially in the descending branch.

Right Lung.—At base, acute congestion and increased friability of lung substance.

Liver.—Gall-bladder contains dark brown bile. On section little to note beyond cloudy swelling.

Spleen.—Somewhat atrophied.

Kidneys.—Congestion. Capsule thickened and adherent. Cloudy swelling of the tubules. A certain amount of interstitial change as well.

Spinal Chord.—Firm and normal in appearance. Membranes healthy.

Brain.—Extreme adhesion of dura to skull. No sign of meningitis at base or elsewhere. Some general thickening of pia arachnoid. Pituitary body enlarged and stalk hollowed out into body.

Supra-renals.—Left a little larger than right.

Summary.—Acute congestion of lungs; recent parenchymatous changes in liver and kidneys; fatty infiltration of heart.

Microscopical Examination.

Muscles.—The levator palpebræ superioris and rectus superior were examined in serial section; portions of the diaphragm and of the neck muscles were also examined, but as they appeared quite normal the following remarks apply to the eye muscles only.

On examination of a transverse section with a low power, the first point which struck one was the generally rounded out-

lines of the individual fibres. Instead of fitting closely into each other and presenting irregularly polygonal outlines, many were perfectly circular and lying at some little distance apart from one another. With a hæmatoxylin and eosin stain, most of the fibres stained a pale pink colour, a comparatively small number staining a darker red.

In longitudinal section an occasional fibre showed, in a portion of its length, diminution or loss of the transverse striation, with, at the same time, an increase of the longitudinal striation, giving rise to a slightly fibrillated appearance. In these parts the nuclei were also more abundant than elsewhere in the fibre. With Van Gieson's stain these parts did not show the characteristic fibrous tissue coloration.

The nuclei seen in sections of muscle were certainly in excess of the normal. A very few fibres presented a swollen outline and contained nuclei in their interior, and some of these fibres also showed vacuolation. In longitudinal section, continuous rows of a dozen or more sarcolemma nuclei were not infrequent. There were other nuclei present, however, in addition to those of the sarcolemma. The majority of these belonged to small lymphocytes, occurring as isolated scattered cells between the muscle fibres, and also as small perivascular accumulations, none of the latter, however, being of any great size comparable with the "lymphorrhages" described by many authors. A few of the nuclei were those of "mast" cells, and some probably of plasma cells.

Ductless Glands:—

Thymus.—No evidence of the presence of any thymus structure was found.

Supra-renals.—These appeared to be quite healthy. No lymphorrhages.

Thyroid.—The lining cells of the vesicles showed a very slight degree of proliferation. No lymphorrhages.

Pituitary.—The capsule was slightly thickened. The capillaries of the glandular portion were greatly distended and engorged with blood corpuscles. This distension was so great, as compared with that found in the vessels of other organs, that there was no doubt that it was pathological, and not

merely an agonal phenomenon. In the pars intermedia there appeared to be several small hæmorrhages. As regards the epithelial cells, there appeared to be no essential departure from the normal, either in their arrangement or character, or in the relative proportions of the clear and dark granular cells. There was a slight trace of colloid material.

Nervous System.—An unusual condition was found in the pons and medulla, viz., a general distension of their venous system and the presence of abnormally large veins immediately under the floor of the fourth ventricle. Associated with these was an œdematous condition of the surrounding brain substance. The brain stem was examined in serial sections. Anterior to the aqueduct of Sylvius there were no specially large vessels, although the veins generally were somewhat distended and with spaces surrounding them—the result of shrinkage in the œdematous tissue during the process of fixation. The surrounding tissue had a rarefied or porous appearance, which was particularly noticeable in the third nucleus. The cells of this nucleus showed some central chromatolysis. There were small perivascular accumulations of lymphocytes about some of the vessels.

At the upper end of the fourth ventricle the porous appearance of the tissue just under its floor was very well marked (Fig. 2). A number of corpora amylacea were also noticed in the superior medullary velum.

A little below the inferior orifice of the aqueduct, immediately underneath the centre of the floor of the ventricle, there appeared a dilated vein. Traced in a downward direction, it was found to branch, the branches diverging from the middle line, but remaining just ventral to the floor of the ventricle. The branch on the right side divided again into several vessels, three being seen in the lower part of the pons (Fig. 3); they re-united into a single vessel, which passed downwards into the medulla, near the raphe. It is seen in Fig. 4 passing outwards towards the dorsal nucleus of the vagus, and encroaching upon the hypoglossal nucleus.

Below this level, the dilatation ceased abruptly, thus it is not seen on the right-hand side of Fig. 5. The left branch

remained single, running just ventral to the floor of the ventricle, separated from it by a thin layer of nervous tissue, forming an eminence in the floor easily visible to the naked eye. In the lower part of the pons and upper part of the medulla, it ran slightly to the left of the middle line. It lay just dorsal to the hypoglossal nucleus, but in close proximity to it and compressing it. In the lower part of the medulla it attained its greatest size, and at the same time diverged more rapidly from the middle line, moving outwards as far as the dorsal nucleus of the vagus, but keeping close to the ventricular floor, and decreasing rapidly in size.

These large veins, whose walls were quite thin and of normal structure, were usually retracted from the surrounding tissue, which presented the porous appearance described above. Other veins (Fig. 5) in the medulla and pons appeared to be rather distended and had around them a similar though less pronounced cedema.

The cells of the seventh nucleus contained much pigment, but appeared otherwise healthy. Those of the twelfth showed a well-marked central chromatolysis.

The only other portion of the nervous system in which anything abnormal was found was the cervical sympathetic ganglia. Both superior and inferior ganglia presented a marked general fibrous sclerosis, with great hyaline thickening of the vessel walls. Their cells, however, appeared to be healthy. There was no appearance of any disease within the spinal cord, which was examined by the usual methods.

The heart, lungs, liver, kidneys, and various portions of the alimentary canal were examined, but showed nothing noteworthy.

The above case is remarkable for the absence of any definite "lymphorrhages," such as have been found in so many cases of myasthenia. There was certainly here and there in the eye muscles a slight increase of lymphocytes, but neither in them nor in any other organ was there any such similar accumulation as deserved the title of lymphorrhage. The muscles were not normal, it is true, having lost their polygonal outline and become circular, and presenting a certain increase of the sarcolemma nuclei and some degrees of vacuolation.

The pituitary body showed a remarkable degree of congestion and engorgement of the capillaries of its anterior lobe. We

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satisfied ourselves that this condition was not a development merely of the last hours of life. There was no definite evidence of any hyperactivity of the cells of the gland. Changes in the pituitary have been described by Laignel-Lavastine and others, and from the ascertained functions of the hypophysis it may well be that disturbances of its circulation may be responsible for some of the symptoms of the disease.

The most striking of the post-mortem appearances, however, is the remarkable dilatation of the vessels of the pons and medulla, especially those immediately ventral to the floor of the fourth ventricle, and the oedematous condition of the nervous tissue. The relationship of these dilated vessels to the nuclei of the vagus and of the hypoglossal nerves suggests the possibility that temporary alterations in the circulation may have had some influence in producing the sudden accidents in the course of the disease.

DESCRIPTION OF PLATES.

PLATE 18.

Fig. 1.—Section of pituitary body (anterior lobe). (Eosin and methylene blue. $\times 400$.) To show the dilated and engorged condition of the capillaries of the gland.

PLATE 19.

Fig. 2.—Coronal section of floor of the fourth ventricle immediately below the aqueduct of Sylvius. (Van Gieson stain. $\times 400$.) To show great dilatation of veins anterior to the floor of the ventricle. These veins unite to a single trunk at a slightly higher level. Large shrinkage space round the vessels. Porous condition of the nerve tissue due to oedema(?).

Fig. 3.—Similar section at a lower part of the pons. (Same stain.) To show bilateral dilatation of veins near the floor of the ventricle, with marked perivascular shrinkage spaces. (An artificial cleft of the tissue on the right side.)

PLATE 20.

Figs. 4 and 5.—Coronal sections of medulla, at two slightly different levels. To show dilated veins with wide shrinkage spaces. The dilatation on right side of Fig. 4 ceased almost immediately below this level. That on left side of Fig. 5 could be traced for a considerable distance downwards.

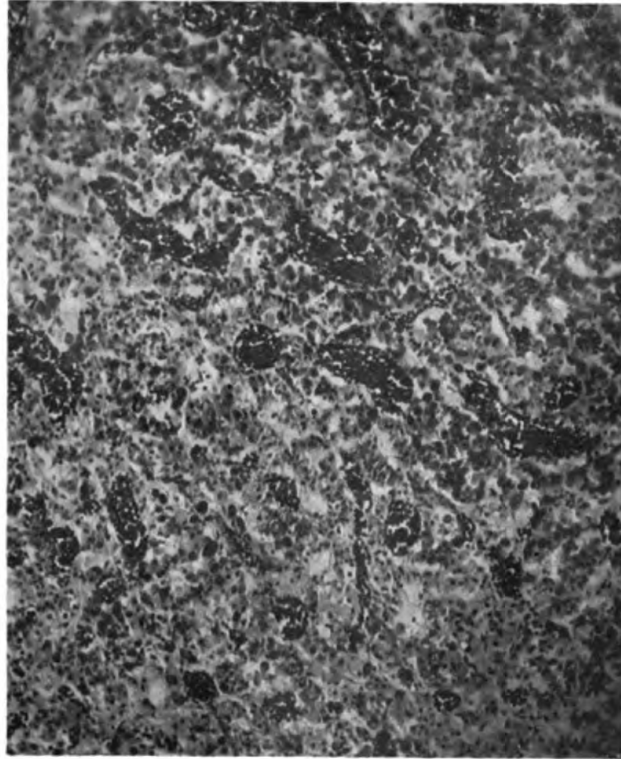


FIG. 1.

To illustrate Paper by Drs Bruce and Harvey Pirie.

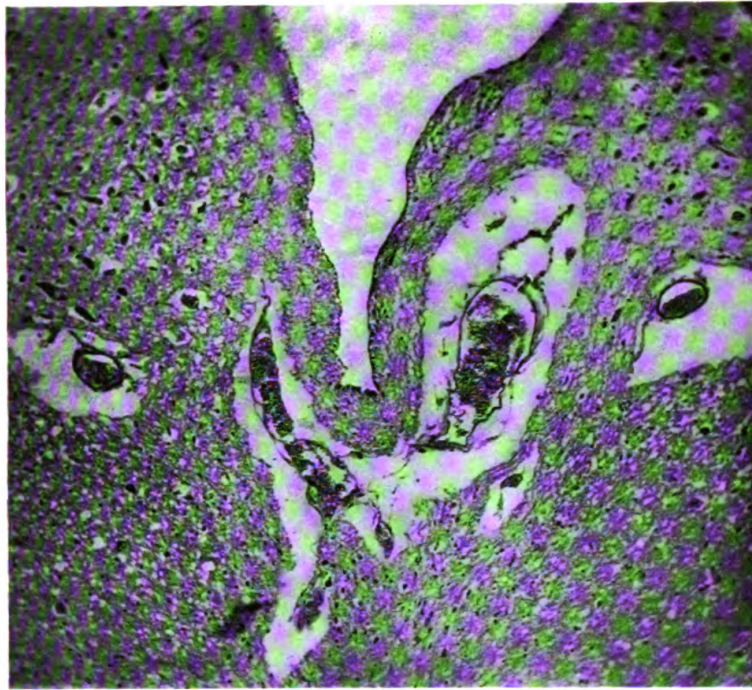


FIG. 2.

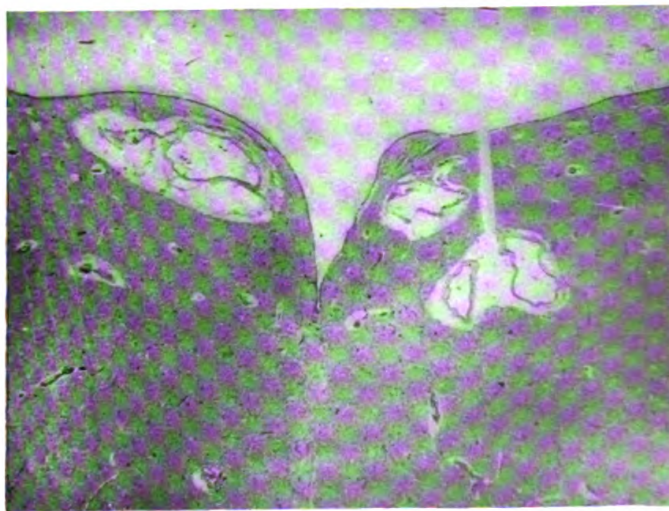


FIG. 3.

To illustrate Paper by Drs Bruce and Harvey Pirie.



FIG. 4.



FIG. 5.

To illustrate Paper by Drs Bruce and Harvey Pirie.

Abstracts

PHYSIOLOGY.

**ON THE POSITION OF THE SPECIAL FIBRES FOR THE
(473) UPPER AND LOWER EXTREMITIES WITHIN THE
PYRAMIDAL TRACT IN MAN.** (Über die Lage der für
die oberen und unteren Extremitäten bestimmten Fasern
innerhalb der Pyramidenbahn der Menschen.) Dr GIERLICH,
D. Ztschrft. f. Nervenheilk., Bd. 39, H. 3 and 4, S. 259.

FROM a study of the secondary degeneration in a case with a cerebral monoplegia of the left leg (due to a cortical cyst), and a consideration of the clinical and experimental evidence of other workers, the author comes to the following conclusion. In all probability the fibres for the different extremities and parts run (with individual peculiarities) in distinct and particular bundles in the internal capsule and crus, but from the lower end of the pons downwards they are quite mixed up and not separable into groups.
J. H. HARVEY PIRIE.

**ON THE APPARENT BRIGHTENING OF THE TELESCOPIIC
(474) FIELD IN THE DUSK.** MULLER, *Zeitschr. f. Sinnesphysiol.*,
Abt. II., Bd. 44, H. 5, 1910, p. 323.

THE author explains that this phenomenon depends upon the influence of reduced illumination upon the relationship between objective and apparent brightness. The paper does not lend itself to abstract, and should be read in the original by those interested in the subject.
H. M. TRAQUAIR.

PATHOLOGY.

**CONTRIBUTION TO THE PATHOLOGICAL ANATOMY OF
(475) GENERAL PARALYSIS: VISCERAL ALTERATIONS.
SOME CONSIDERATIONS ON PLASMA-CELLS.** (Contributo allo studio dell' anatomia patologica della paralisi progressiva: alterazioni viscerali. Qualche considerazione sulle plasmacellule.) G. CATÒLA (of Florence), *Riv. di Pat. nerv. e ment.*, Jan. 1910.

THE author reports the results of the examination of the general organs of seven cases of classical general paralysis, two of whom

died in epileptiform attacks, two in apoplectiform attacks, and three with cachexia and well-marked bed-sores. The lesions found in the various organs were for the most part banal—cloudy swelling, fatty degeneration, arteriosclerotic changes, connective tissue hyperplasia, capillary hyperæmia, interstitial hæmorrhages. In all the organs studied plasma-cells were found; these were most numerous in the portal spaces of the liver, the spleen, the lymph glands, and the optic nerve; even where abundant they did not seem to be in close relation to the vascular apparatus; they were in the midst of the connective tissue, and their number was in relation to the amount of that tissue. In the brain, therefore, they would necessarily have to be in the neighbourhood of vessels. The author discusses the numerous other conditions in which plasma-cells occur in the general organs. Their diffuse distribution points to general paralysis in the absence of other special lesions to account for them. He believes that plasma-cells are of connective tissue origin, although he admits that very similar cells are hæmatogenous in origin. The article is illustrated by one coloured plate.

C. MACFIE CAMPBELL.

ON THE HISTOPATHOLOGY OF SPECIAL ALTERATION
(476) **DESCRIBED BY MARCHIAFAVA IN THE CORPUS**
CALLOSUM OF CHRONIC ALCOHOLICS. (Sull' istologia
patologica da una speciale alterazione descritta da Marchiafava
nel corpo calloso degli alcoolisti.) O. ROSSI (of Florence),
Riv. di Pat. nerv. e ment., June 1910.

MARCHIAFAVA described in chronic alcoholism a lesion of the corpus callosum which consists in a primary degeneration of the nervous fibres which occupy the median parts of the corpus callosum, while the dorsal and the ventral parts retain their normal appearance. He and Bignami had observed this change in twelve cases.

These authors later called attention to the fact that a similar lesion may also be found in the anterior commissure and in the middle peduncles of the cerebellum. In the present communication Rossi gives the histopathology of these lesions with special reference to the changes in the axis cylinders and the neuroglia, and to the products of nerve degeneration. The article is illustrated by several photographs and one coloured plate.

C. MACFIE CAMPBELL.

THE PATHOLOGICAL ANATOMY OF INFANTILE ENCEPHALOPATHIES. BABONNEIX, *L'Encéphale*, March 1910, p. 310.

IN three cases of mental mal-development, or arrested development, the author found the more or less constant pathological changes of microgyria, disappearance of myelinated fibres, thickening of the pia-arachnoid, with adherence to the cortex, hæmorrhages in the cortex of varying size and age, alterations in the nerve cells, neuroglial overgrowth, atrophic sclerosis of the convolutions.

S. A. K. WILSON.

THE HISTOLOGY OF THE SOLAR PLEXUS IN VARIOUS MENTAL DISEASES. (Sur l'histologie du sympathique solaire dans différentes maladies mentales.) OBREGIA and PITULESCU, *L'Encéphale*, April 1910, p. 393.

THE normal histology of the solar plexus is so variable and difficult of interpretation that changes under pathological conditions are not easy either to determine or to explain. The authors find that the solar neurocytes are rich in chromoplasm of the gyrochrome type (*i.e.* with fine granulations). They do not think an excentric position of the nucleus of any significance. Chromatolysis of the cells does not appear to follow any recognisable law. The chief point of difference among the various cells of the solar plexus is one of volume. Little importance can be attached to differences in the length of dendrites. Many axons are found by Cajal's method to terminate in a reticulated or fibrillated glomerulus which is in the closest opposition to the body of a nerve-cell and sometimes seems to produce a sort of excavation in it. The glomerulus has no capsule. It may be considered as forming an interneuronal articulation. In other instances the glomerulus is larger, is placed at the end of a shorter axon, and not so close to the body of a neurocyte. The authors have failed to find these glomeruli in the solar plexus of children and animals. They adduce evidence to show that the appearance of glomeruli is synchronous with and the expression of a state of cellular malnutrition.

S. A. K. WILSON.

CLINICAL NEUROLOGY.

MYATONIA CONGENITA OF OPPENHEIM. J. V. HABERMAN, (479) *Amer. Journ. Med. Sci.*, March 1910.

MYATONIA CONGENITA is regarded as a new clinical entity, and in its typical form is a sharply defined syndrome differentiable

from all the heretofore known myopathies and spinal atrophies, constituting a congenital atonic or hypotonic pseudo-paralytic condition seen mostly in children within the first two years of infancy; this condition is associated with loss of tendon reflexes, without reaction of degeneration and atrophy, of proximal distribution, always affecting the lower, yet often the upper extremities, trunk and neck beside, but not the muscles of bulbar innervation. There is a tendency to spontaneous though slow improvement. The pathology of the condition is still obscure.

D. K. HENDERSON.

OPTIC ATROPHY FOLLOWING MUMPS. (*Atrophie optique post-(480) ourlienne.*) JACQUEAU, *Lyon méd.*, 1910, cxiv., p. 928.

A MAN, aged 23, with no history of syphilis or tubercle, had an uncomplicated attack of mumps in 1908. A year later diminution of vision was noticed, and double optic atrophy was found. As no other pathological factor could be incriminated, Jacqueau attributed the visual lesion to mumps. Only three other cases of optic atrophy following mumps have been recorded.

J. D. ROLLESTON.

THE CILIARY GANGLION AS THE PERIPHERAL CENTRE
(481) **FOR THE PUPILLARY LIGHT REACTION AND THE**
ARGYLL ROBERTSON SIGN. MARINA, *Presse Médicale*,
June 1910, No. 51, p. 480.

AFTER reviewing his previous work and that of others in connection with the relation of the ciliary ganglion to movements of the iris, the author states his conviction that this ganglion is a peripheral centre for constriction of the pupil.

In cases of general paralysis and tabes, in which the pupillary light reaction is absent, involvement of the ciliary neurone has been found. The fundamental condition is always the absence of the light reflex, and the Argyll Robertson sign is not to be regarded as a phenomenon of special nature or localisation.

In experiments on monkeys the author has shown by tenotomising the internal rectus and grafting other muscles on to its insertion, by moving the eye mechanically, and in other ways, that the pupil contracts when the eye is turned inwards irrespective of the motive agent employed, thus demonstrating that the reaction does not necessarily depend upon a hypothetical subcortical convergence centre.

The author's theory is that, if the disease of the ganglion, although sufficiently advanced to destroy the light reflex, is not very severe, those cells which still remain may react to stimuli produced by the stretching of the short ciliary nerves due to the rotation of the eye.

On this hypothesis the pupil of the eye which turns in would contract whether in convergence or in associated lateral movement, and the author has recently observed in some cases that this actually occurs. The work of Gianelli is referred to, who, in a large number of cases, has seen contraction of the pupil in the inturned eye in concomitant lateral movements and sometimes also dilatation of the pupil in the eye which is turned outwards.

These reactions, however, require special illumination for their detection. The author submits that among syphilitic and parasymphilitic lesions the peripheral origin of the Argyll Robertson sign, due to an affection of the ciliary neurone, is based on facts as well as being the simplest hypothesis. H. M. TRAQUAIR.

**DESTRUCTION OF THE CERVICO-DORSAL CORD BY
(482) REVOLVER SHOT. SURVIVAL FOR TWENTY-FOUR
HOURS. INTEGRITY OF THE PUPILLARY MECHANISM.** VICTOR CORDIER, *Arch. de Neurol.*, July 1910, p. 35.

A YOUNG woman was shot at close range with a revolver, the bullet penetrating the antero-lateral region of the neck. She was comatose for $2\frac{1}{4}$ hours, but the pupils reacted to light. She then recovered and was perfectly sensible, but the body was completely paralysed from the neck downwards. Her eyes were in every way normal, the respiration a little accelerated, the heart's action normal. She died after an attempt to operate. At the autopsy the bullet was found to have entered the vertebral column between the sixth and seventh cervical vertebræ, but the membranes remained intact. The cord, however, was completely disintegrated from the level of the fourth cervical root to that of the sixth dorsal, with some hæmorrhagic effusions both higher and lower. The brain was quite intact. One interesting point is the mode by which the cord was so mashed into pulp, apparently by the compression of the cerebro-spinal fluid inside the intact membranes, but the most interesting feature is the complete integrity of the pupillary reactions. It would seem to place the cilio-spinal centre in a secondary rank, and only, it may be, accessory to a bulbar centre from which the pupillary reactions are controlled, quite independently of the cervical cord-first dorsal route.

J. H. HARVEY PIRIE.

SYPHILITIC PARALYSIS OF THE TRIGEMINAL NERVE.

(483) WILLIAM G. SPILLER and CARL D. CAMP, *Amer. Journ. Med. Sci.*, March 1910.

THE trigeminal nerve is seldom paralysed without implication of other cranial nerves. The authors have several times found bilateral degeneration of the trigeminal nerve, including the spinal root, in tabes.

A case of cerebral syphilis, with autopsy, is reported, in which, in addition to a right-sided hemiplegia and spastic condition of the left leg, there was a paralysis of the right fifth nerve.

Sections of the roots of the nerve showed much degeneration. Recent degeneration of the nerve was also revealed within the pons and within the spinal root.

D. K. HENDERSON.

THE SYMPTOM-COMPLEX OF THE ACUTE POSTERIOR POLIO-

(484) **MYELITIS OF THE GENICULATE, AUDITORY, GLOSSOPHARYNGEAL, AND PNEUMOGASTRIC GANGLIA.** J. RAMSAY HUNT (New York), *Arch. Intern. Med.*, Vol. 5, June 15, 1910.

A STUDY of the symptomatology, complications, and various clinical combinations of acute posterior poliomyelitis (herpes zoster) of the peripheral root ganglia of the facial, auditory, glossopharyngeal, and vagus nerves. The ganglionic structures concerned are: The geniculate of the 7th, the ganglion of Corti, and the ganglion of Scarpa of the 8th; the ganglion petrosum (Andersch) and the ganglion of Ehrenritter of the 9th; the ganglion jugulare and the ganglion plexiforme of the 10th. All these structures originate from the *neural ridge*, in common with the posterior spinal ganglionic chain, and are therefore susceptible to the specific inflammatory reactions of herpes zoster (herpetic ganglionitis or posterior poliomyelitis).

The subject-matter is considered under the following general headings:—

1. Report of personal cases of herpes zoster oticus. Clinical abstracts of nine cases with herpes zoster oticus, in which the eruption was distributed in the geniculate area in seven, and in the vagal zone in two. Facial palsy was present in six of the cases, and a unilateral paresis of the soft palate in two.

2. The zoster zones of the geniculate, glossopharyngeal, and vagal ganglia on the external ear (herpes zoster oticus). An attempt is made to differentiate the zoster zones on the external ear by the herpes zoster method.

3. The paralytic complications of herpes zoster oticus. These

consist of facial palsy, auditory symptoms (deafness and Menière's syndrome), paresis of the soft palate and symptoms, indicating irritation of the pneumogastric nerve.

4. The zoster zones of the glossopharyngeal and vagal ganglia, within the buccal cavity (herpes zoster pharyngis and herpes zoster laryngis).

5. The complications of herpes zoster pharyngis and herpes zoster laryngis. Among these are facial and palatal palsies; auditory and pneumogastric symptoms.

6. Herpes zoster of the tongue with facial palsy.

7. Posterior poliomyelitis of the auditory ganglia. A consideration of the auditory symptoms, complicating herpes zoster of the cephalic extremity, also of the posterior poliomyelitis of the auditory ganglia *without herpes zoster*.

8. The paralytic complications of herpes zoster facialis and herpes zoster occipitocollaris.

9. Concluding remarks.

From the evidence which has been presented, I believe that we are justified in isolating a large and varied group of cases, characterised by herpes zoster of the cephalic extremity, associated with facial palsy, auditory, glossopharyngeal and pneumogastric symptoms, and in regarding them as constituting a well-defined clinical picture. A number of syndromes are thus united in a symptom-complex, having a common etiology and pathology.

The neural complications may occur singly, or in various combinations, depending on the degree of the infection and the localisation of the inflammatory process. Because of the tendency to invasion of more than one ganglion in cephalic zona, neural complications may occur even when the eruption is situated in the distribution of a ganglion situated above or below that causing the paralysis. In this event the nerve complication is caused by an inflammatory reaction in the ganglion of the affected nerve sufficient to cause a transient palsy, but not to produce an eruption.

The general symptoms may be very mild, or they may reach a high degree of severity, in consequence of which a considerable variation in the clinical picture results.

The neural symptoms are often singularly transient in their duration, all trace disappearing within a few days or a fortnight. Not infrequently permanent structural changes take place with persistent disturbance of function.

As is well known, paralytic complications may occur in other parts of the body in zona; notably of the ocular nerves, but also in the distribution of the spinal nerves. These are, comparatively, rare, probably because the inflammatory lesions are limited by the capsule of the ganglion, and in order to reach the motor nerves of

the eye in Gasserian involvement, or the anterior root in that of the spinal ganglia, the inflammation must first break through this fibrous wall, or travel for some distance along the course of the sensory nerve. The capsule of the ganglion, therefore, forms a natural barrier and protection against the extension of the inflammatory process.

Anatomical conditions are different, however, in the ganglia under consideration. Here the fibres of the seventh, eighth, ninth, and tenth nerves are in more immediate relation to the cell structures of their respective ganglia, and are not separated by an intervening fibrous wall.

For this reason very slight inflammatory reactions within these ganglia jeopardise their respective nerve fibres. This intimate association of ganglionic structure and nerve fibres would account, not only for those cases with light and transient symptoms, but also for those of a more severe grade, with lasting impairment of function.

In my study of this group of cases, I have encountered none in which a fatal issue could be attributed directly to the disease itself. It is well known that a unilateral lesion or section of the vagus is not necessarily dangerous to life; and as herpes zoster is usually unilateral, pneumogastric involvement on one side would not be fatal. If, however, bilateral zona of the cephalic extremity should occur, involving the ganglia of the pneumogastric nerves on both sides, dangerous symptoms, or even a fatal termination might result. It is perhaps significant in this connection to recall the widespread belief among the laity of the fatal tendency of bilateral shingles. Possibly we have here an explanation for a tradition which is common to all nations.

I would also emphasise the fact that in my study of this subject, I have found no cases with facial, auditory, glossopharyngeal, or pneumogastric nerve complications, accompanying an eruption of herpes zoster, except when situated on the cephalic extremity of the body; *i.e.* herpes facialis, oticus, pharyngis, laryngis, lingualis, and occipitocollaris. That such neural complications do not accompany an eruption in the lower segments of the body is readily understood from the tendency of the posterior poliomyelitis to limit itself to a small series of ganglia, usually only one or two. In severe forms of infection, however, with extensive involvement of the cerebro-spinal chain or ganglia, there is no reason, theoretically, why cranial nerve palsies may not occur.

It is my firm conviction that cases belonging to the group which I have just described are of much more frequent occurrence than might be inferred from the study of our literature, the reasons for which are to be found in the smallness and inaccessibility of the eruptive areas, making their detection difficult; or all

traces of the eruption may have disappeared before the case comes under observation, when a retrospective diagnosis might be difficult or impossible.

It also seems probable that some cases which are interpreted as rheumatic palsies of the face, palate, and even the larynx, may belong to this group, as well as toxic unilateral palsies of obscure origin. This, I believe, is also true of unilateral affections of the auditory nerve.

AUTHOR'S ABSTRACT.

THE SENSORY FUNCTIONS ATTRIBUTED TO THE SEVENTH (485) NERVE. C. K. MILLS, *Journ. of Nerv. and Ment. Dis.*, May 1910, p. 273, and June, p. 355.

IN THIS important paper, Mills reviews the whole question of the sensory functions of the seventh nerve on the basis of an extensive experience, particularly of facial paralysis and Gasserian extirpations. The following conclusions summarise the paper:—

1. If by the seventh nerve is meant that nerve trunk which arises in the pons from the lower and upper facial nuclei, this nerve is purely motor.

2. It is doubtful whether nerves whose functions are concerned with the pressure and postural senses are conveyed in the branches and trunk of the motor facial.

3. The afferent systems for epicritic and protopathic sensibility are not represented in the seventh nerve.

4. The geniculate ganglion is the homologue of the dorsal spinal ganglia.

5. If the geniculate ganglion, the intermediary nerve of Wrisberg, and the chorda tympani are considered part of the facial or seventh nerve, then this nerve may be regarded as partly sensory, having functions chiefly gustatory.

6. Nerve fibres concerned with the transmission of gustatory impulses proceed from their origin in the geniculate ganglion to their distribution by way of the great superficial petrosal nerve and the chorda tympani. The destination of the former nerve is the soft palate, where its fibres terminate in taste buds, and of the latter nerve the taste buds in the anterior two-thirds of the tongue with the exception of its tip.

7. Evidence is lacking that in the facial trunk proper, in the intermediary nerve of Wrisberg, the great superficial petrosal, the small superficial petrosal, or the chorda tympani are nerves of common sensibility, although some observations would seem to indicate that the anterior part of the tongue, and possibly a very small strip of the auricle, have a vestigial supply of this sort.

8. Herpes does not originate from inflammation of nerves which are not concerned with cutaneous or membranous sensibility.

9. Limited inflammation of the geniculate ganglion may, in rare cases, occur, producing a syndrome whose factors are loss or perversion of taste and vasodilator and secretory phenomena.

10. If the geniculate ganglion is the seat of inflammation, adjoining parts, such as the facial nerve proper and the eighth nerve, may be involved by pressure or extension, thus giving rise to peripheral facial paralysis and to acoustic phenomena and phenomena of equilibration and of orientation, vasodilator and secretory symptoms, or to some of these symptoms.

11. The cases of herpetic inflammation—cervico-occipital, auricular and facial—which have been observed in connection with facial paralysis, or facial paralysis and acoustic symptoms, are best explained on the supposition of an involvement of ganglia other than the geniculate.

ERNEST JONES.

DIPHTHERITIC PARALYSIS IN AN ADULT WITHOUT AP-

**(486) PARENT LOCAL LESION. (Un cas de paralysie diph-
térique chez un adulte survenue sans lésion locale apparente.)**

ZEMBOULIS, *Méd. moderne*, 1910, p. 193.

ON December 27th Zemboulis was attacked with severe sore throat, headache, and shivering. The fauces showed a diffuse redness without any membranous formation. Local remedies only were employed, and Zemboulis did not keep to his room. On January 8th the voice, which had been hoarse for two or three days, became so weak that it could not be raised above a whisper. On examination paralysis of the right side of the soft palate and of the right vocal cord was found. Cultures of the throat showed diphtheria bacilli. Injections of antitoxin were started on January 13th and continued till the 31st, 300 c.c. in all being given. Local treatment was also employed. Recovery took place, though the larynx and pharynx remained very susceptible to cold or exertion for some time longer.

J. D. ROLLESTON.

EXPERIMENTAL STUDIES ON ACUTE POLIOMYELITIS. (Ex-

(487) perimentelle Untersuchungen über Poliomyelitis acuta, IV.)

C. LEINER and R. v. WIESNER, *Wien. klin. Woch.*, Nr. 22, 1910, S. 817.

THE points established in this series of the writer's reports are as follows. The virus can remain for a long time in the cord in a virulent condition and also occasionally in the various lymphatic glands of the body, and sometimes also in the mucous membrane of the naso-pharynx. The alimentary and urinary tracts ap-

parently play no part in the excretion of the virus from the affected organism. A well-marked, active immunity is usually acquired after an attack of the disease, but not always. Neither immunity nor hypersensitiveness, however, seems to follow on a first infection, which runs a non-reacting course, nor does there appear to be any hypersensitiveness during the latent period of infection.

J. H. HARVEY PIRIE.

**DOES POLIOMYELITIS OCCUR DURING INTRA-UTERINE
(488) LIFE?** F. E. BATTEN, *Brain*, June 1910, p. 149.

IN this paper Dr Batten records two cases which clinically were typical cases of the late results of acute poliomyelitis. The pathological condition found was also that which is commonly found in late cases of poliomyelitis. In the first, the clinical history was so definite and the child had been so long under observation that there seems but little reason for not accepting the history as correct and regarding it as one of intra-uterine poliomyelitis. In the second the clinical evidence is defective, and it is possible that the onset of the acute attack occurred after birth. The evidence on the whole is in favour of the assumption that poliomyelitis does occur during intra-uterine life, but the chain of evidence is in some respects incomplete.

J. H. HARVEY PIRIE.

**APPEARANCE IN EPIDEMIC FORM OF INFANTILE PARALYSIS
(489) IN PARIS AND THE SUBURBS IN 1909.** (*Apparition sous forme épidémique de la paralysie infantile à Paris et sa banlieue en 1909.*) A. NETTER, *Bull. de l'Acad. de Med.*, 1910, lxxiii., p. 458.

THERE has been an unusual prevalence of poliomyelitis in Paris in the course of the last year, 100 cases having been observed by Netter between June 1909 and May 1910. The cases were most numerous in the summer and autumn, as is the rule, even apart from epidemics, so that poliomyelitis presents in this respect a marked contrast to cerebro-spinal fever, which is essentially a disease of the spring. A typical meningeal onset often led to the erroneous diagnosis of cerebro-spinal meningitis. Lumbar puncture in such cases gave issue to a clear fluid which sometimes contained a few flakes of fibrin, and cytologically showed a lymphocytosis. In only three cases did abnormal palsies occur, viz., involvement of the cranial nerves. In a relatively high number of cases the palsies after a few months showed a decided improvement, and only a very slight impairment of

function persisted. Death from respiratory paralysis occurred in five cases—the same mortality as in the New York epidemic.

In relation to the infectivity of the disease, Netter notes that three children went to the same school. Examples of abortive forms, to which Wickman has drawn attention, were found in the families of five patients. Netter is of opinion that the disease is spread by the products of secretion and excretion, which must therefore be rendered inoffensive.

J. D. ROLLESTON.

**CRITICAL REMARKS ON THE PRACTICAL VALUE OF THE
(490) WASSERMANN REACTION. (Kritische Bemerkungen zur
praktischen Verwertung des Wassermann'schen Verfahrens.)**
COHN, *Neurol. Centrallbl.*, Nr. 13, 1910, S. 688.

THE paper formed an introduction to a discussion on this subject by the Berlin Society for Psychiatry and Neurology. The author brings forward three points:—

1. Several experienced observers working with the same serum may obtain different results. In such a case the reaction should be considered, according to the collected findings, as "doubtful inclining to positive," or "doubtful inclining to negative," as the case may be.

2. A positive reaction may be obtained in a nervous disease of a non-syphilitic nature. This has occurred in certain cases of tumour, and in consequence of the positive finding the patient has not been given the chance of early operation or even of operation at all. Such a possibility must be guarded against by considering that a positive reaction means merely a previous syphilitic infection, and the correct diagnosis of the nature of the condition must be made on other grounds.

3. The reaction has been used by some as a therapeutic agent in cases of syphilophobia. Apart from the advisability of adopting such a form of treatment, it must be remembered that a negative finding by no means indicates a non-syphilitic infection; this has been proved by the examination of a series of cases of cerebro-spinal lues.

F. E. REYNOLDS.

**THE WASSERMANN REACTION IN RELATION TO EXPERI-
(491) MENTAL LESIONS OF THE TISSUES OF THE CENTRAL
NERVOUS SYSTEM. (La reazione del Wassermann in
rapporto a lesioni sperimentali della sostanza nervosa centrale.)**
NIZZI, *Riv. Speriment. di Freniat.*, Vol. 37, 1910.

SINCE the method of deviation of the complement was first applied to the diagnosis of syphilis, the question of the specificity of the

Wassermann reaction has been investigated by many observers, several of whom have denied any specificity at all.

The author has applied the reaction to the serum of animals in which the tissues of the central nervous system have been injured in varying degrees. The experiments have been carried out on dogs and rabbits; they consisted in injuring the brain substance by passing an instrument into it after trephining the skull, cutting across the spinal cord above the lumbar region, and injecting an emulsion of brain substance into the peritoneal cavity. The results in the last instance were inconclusive, but both in dogs and rabbits there was a positive reaction in a large percentage of cases after injury to the brain or section of the spinal cord.

The author suggests that probably the destroyed nerve tissue became absorbed, and conferred the power of deviating the complement on the serum of the blood. On what substance this depended, or by what mechanism it was accomplished, is not known. It may have been due to some active principle contained in the brain, to special colloid substances, to lipoids, or to some product of the degeneration of nerve tissue. He refers to cholesterine as a substance which is contained in large quantities in the brain, can pass into the blood and cerebro-spinal fluid, and has the power of deviating the complement, and the reaction may possibly have been due to its being present in the serum of the animals experimented on.

R. G. Rows.

THE WASSERMANN AND NOGUCHI COMPLEMENT-FIXATION

(492) **TEST IN LEPROSY.** HOWARD FOX, *Amer. Journ. Med. Sci.*, May 1910.

THE author has examined 60 cases, none of which gave a history of syphilis, or showed any signs of it. Fifteen cases were tested by both the regular Wassermann and the Noguchi methods, the results in all cases being identical. The other 45 cases were tested by the Noguchi method alone.

Of the 38 cases of the tubercular and mixed type, the reaction was negative in 7, weakly positive in 3, positive in 21, and strongly positive in 7 cases. Of the 22 maculo-anæsthetic and purely anæsthetic cases the reaction was negative in 19, strongly positive in 1, and positive in 2 cases.

D. K. HENDERSON.

SYNDROME OF BROWN-SÉQUARD, &c., FOLLOWED BY AUTOPSY.

- (493) (**Syndrome de Brown-Séquard, avec dissociation syringomyélique de la sensibilité diminution des reflexes du côté paralysé ; hémisection incomplète de la moelle, constatée à l'autopsie.**)
 MAILLARD, LYON-CAEN, and MOYRAND, *L'Encéphale*, March 1910, p. 267.

As the result of a stab, which penetrated the third cervical segment on the right side, and almost hemisected the cord, the following symptoms were observed: hemiplegia on the right side with extreme diminution of the tendon reflexes, hyperalgesia, diminution of pallæsthesia; on the left side, sensibility to pain and temperature entirely lost over arm and leg and trunk up to a line half-way between the nipple and the clavicle, with perfect conservation of touch and localisation. Sense of position normal on both sides. No vasomotor disturbance. Apparently no disturbance of respiration (except that it was slightly quickened), and no defect of movement of the diaphragm. Enophthalmus of the right eye, with myosis of the pupil and narrowing of the palpebral aperture.

In the photograph of the cord that accompanies the paper, the transverse traumatic lesion made by the stab is excellently seen, immediately below the exit of the third cervical roots on the right side. In the neighbourhood of the lesion numerous collections of plasma cells were found in the walls of the blood-vessels. Plasma cells must be devoid of any pathological specificity. The involvement of the cervical sympathetic at this level (not, however, vasomotor fibres, apparently) is interesting. It must be due to impairment of fibres coming from above to the cilio-spinal centre. The disturbance of sensibility is exactly explained by the lesion, the lateral column being cut and the posterior intact. The absence of involvement of the root entry zone on the side of the lesion explains the absence of a band of thermanæsthesia or analgesia at that level on the side of the lesion. The level of analgesia on the body is very considerably below the level of the lesion, and is explained by the fibres running in the cord some distance before crossing.

S. A. K. WILSON.

TUBERCULOUS MENINGITIS IN ADVANCED LIFE. (Ueber

- (494) **meningitis tuberculosa bei älteren Individuen.)** J. JAQUET,
Deut. med. Woch., 1910, p. 449.

JAQUET records seven cases in patients aged from 42 to 68 years, four of whom were men and three women. The clinical picture

was strikingly uniform and monotonous, thus presenting a marked contrast to the variability of symptoms met with in children and young persons generally. It was, therefore, always possible to make a correct diagnosis during life. Lumbar puncture was hardly ever required, either for diagnostic or therapeutical purposes. Pronounced hebetude was met with in every case, and rapidly developed into unconsciousness. Vomiting, so frequent a symptom in the young, was absent in the great majority of cases. Only two complained of headache. Retraction of the abdomen was present in only one case. Nuchal rigidity and Kernig's sign were far from constant. The temperature was very variable; in one it was not raised at all, and in two the rise was only slight. The pulse was not characteristic. No ocular palsies, mono- or hemiplegia were observed. A striking feature was the shortness of the course. In cases where a reliable history could be obtained, the duration of the meningeal symptoms ranged from five to twenty days. The anatomical changes at the autopsy were not always easy to find, but careful examination always revealed the presence of a tuberculous basal meningitis. Jaquet concludes that the ill-marked symptoms, rapid course, and scanty anatomical changes of tuberculous meningitis in the aged render it probable that the disease is more common at this time of life than even his relatively numerous cases indicate.

J. D. ROLLESTON.

PARATYPHOID MENINGITIS. (*Meningitis paratifoidea*.) C. (495) INCLÁN, *La Prensa médica*, 1910, p. 52.

A BOY, aged 4 years, on the fourteenth day of an attack of paratyphoid, developed all the signs of meningitis. Lumbar puncture gave issue to a turbid fluid under hypertension, showing abundant polymorphonuclears. Cultures of the fluid yielded an organism closely resembling Schottmüller's paratyphoid B bacillus. Improvement followed the operation, and after two more punctures the meningeal symptoms completely disappeared. Some days later, however, the temperature rose again to 104°, and the meningeal symptoms returned in an aggravated form. The cerebrospinal fluid was now purulent and rich in polymorphs and organisms similar to those obtained at the first puncture. Death took place on the seventy-fourth day of disease. There was no autopsy. According to Inclán no other instances of meningitis complicating paratyphoid have been recorded.

J. D. ROLLESTON.

CEREBRO-SPINAL MENINGITIS DUE TO THE ASSOCIATION (496) OF THE MENINGOCOCCUS AND STREPTOCOCCUS IN A PATIENT WITH OLD OTITIS. (*Méningite cérébro-spinale due à l'association du méningococque et du streptococque chez un malade atteint d'otite ancienne.*) COLLIGNON and MAISONNET, *Progrès méd.*, 1910, p. 421.

A FATAL case in which anti-meningococcic serum, followed by trephining, was unavailing. In spite of the old otitis the meningitis was not otogenic. The meninges of the convexity, the middle cerebral fossa, and the cerebral sinuses were healthy, and no lesions were found on section of the brain. The meningitis was confined to the meninges of the cord, bulb, cerebellum, and peduncles.

J. D. ROLLESTON.

MENINGISM DUE TO NASAL AND BUCCAL DIPHThERIA (497) WITHOUT FALSE MEMBRANE. INJECTION OF ANTI-TOXIN. RECOVERY. (*Méningisme d'origine diphtérique nasale et buccale sans fausses membranes. Injection de sérum de Roux. Guérison.*) E. BITOT and E. PETGES, *Gaz. hebdomadaire de Bordeaux*, 1910, p. 207.

A MAN, aged 43, was admitted to hospital as a case of cerebro-spinal meningitis. Lumbar puncture gave issue to a clear fluid under hypertension, but without lymphocytosis. No membrane was seen in the throat, but cultures of the naso-pharyngeal mucus showed Klebs-Loeffler bacilli. Two injections of antitoxin were followed by rapid and complete recovery. Five days after this man's admission the patient in the next bed developed naso-pharyngeal diphtheria.

Bitot alludes to two similar cases published by him in 1903. (1) Girl, aged 26 days, in whom symptoms of tetany were associated with diphtheritic conjunctivitis and a similar infection of the umbilicus. Recovery followed six injections of antitoxin. (2) Boy, aged 4½ years, with symptoms of tetanus. Cultivation of the saliva showed diphtheria bacilli. Injection of antitoxin caused aggravation of the symptoms, followed by rapid recovery.

J. D. ROLLESTON.

A CASE OF TRAUMATIC CEREBRAL HÆMORRHAGE, WITH (498) REMARKABLY LATE ONSET OF SYMPTOMS; OPERATION; RECOVERY. G. H. HANNA, RUSSELL COOMBE, and W. GORDON, *Practitioner*, July 1910, p. 121.

A WOMAN, æt. 42, was knocked down by a bicyclist on October 13, 1909. The left eyebrow was severely bruised, but there was

no loss of consciousness. The patient was able to walk and was kept in bed five days.

On getting up she went about her usual work, and made no especial complaint.

Six weeks after the accident she consulted Dr Hanna for a cough and was feeling ill; the next week pain in the left side of the head was felt, and was so severe that the patient had to go to bed. On examination no physical signs of any kind were found, but the site of the pain, *i.e.* over the left temple and upper parietal region, was painful to pressure.

The pain continued to be severe for fourteen days, and she then vomited for the first time. Drowsiness now set in, the pulse was 70, the temperature subnormal.

The next day the patient was unconscious, pulse 60, temperature normal. Double extensor toe reflex was present, especially on the right, but no optic neuritis or other symptoms.

The left side of the skull over the tender area was trephined. The dura mater was found bulging, pulseless, and livid in colour. On incising this, dark-coloured blood escaped from a sub-dural cavity. A tube was inserted.

The patient became conscious three and a half hours after the operation, and recovery was complete.

The writers allude to somewhat similar cases recorded by Harris and Gordon (*Lancet*, April 30, 1904), and by Ballance ("Some Points in the Surgery of the Brain," p. 29).

W. B. WARRINGTON.

[These and similar cases are late compression symptoms from meningeal hæmorrhage, and are of a different order from the class of cases known as late traumatic apoplexy. In the former cases the hæmorrhage no doubt begins at the time of the injury, but symptoms are delayed. In the latter, the intra-cerebral vessels are injured at the time of the injury, but the onset of the actual hæmorrhage is coincident with the onset of the symptoms. —W. B. W.]

**CERTAIN PHENOMENA OF REFLEX HYPERKINESIS IN HEMI-
(499) PLEGIA AND THEIR PROGNOSTIC VALUE.** (Sur certains phénomènes d'hyperkinésie réflex observés chez les hémiplegiques leur valeur pronostique.) CLAUDE, *L'Encéphale*, March 1910, p. 287.

THE author apparently does not refer to those involuntary movements of the hemiplegic limb which occur, *e.g.* during yawning (to which the term pandiculation has been applied), but to

involuntary movement of a paralysed limb on sudden excitation of the skin or muscles by an external stimulus. In three cases in which the phenomena were observed, a marked degree of improvement subsequently took place, and possibly they cannot occur where the destruction of nerve centres is profound. The author believes they are associated with an oedematous condition of the meninges or ventricles, or with intra-cerebral oedema.

S. A. K. WILSON.

EARLY SYPHILIS OF THE NERVOUS SYSTEM. (*Un cas de (500) syphilis nerveuse précoce.*) L. SPILLMANN, WATRIN, and J. BÉNECH, *Méd. moderne* (Soc. de méd. de Nancy), 1910, p. 197.

THE writers record the following case in which the brain, cord, and peripheral nerves were simultaneously affected. A man developed two syphilitic chancres on September 20. *October 14.*—Roseola, followed by generalised papular syphilides a few days later. *October 16.*—Weekly injections of grey oil. *November 25.*—Ulcerative syphilides of penis. *December 17.*—Injections with biniodide of mercury. *Dec. 20.*—Sudden development of the following nervous symptoms:—Cerebral depression, asthenia, melancholia, ideas of suicide, intense girdle pains, cramps in limbs, muscular tenderness, difficulty in standing or walking, Rombergism, exaggeration of knee jerks and ankle clonus. *December 27.*—Complete right facial palsy, with severe pain in the right side of the head, especially over the mastoid. Calomel injections were then adopted, and were followed by rapid improvement.

J. D. ROLLESTON.

CEREBRAL LOCALISATION FROM THE POINT OF VIEW OF (501) FUNCTION AND SYMPTOMS. MORTON PRINCE, *Journ. of Nerv. and Ment. Dis.*, June 1910, p. 355.

THIS paper, which was the Presidential Address to the American Neurological Association at its thirty-sixth annual meeting, contains a number of interesting and suggestive remarks. Prince strongly insists that, when a given function is lost after a certain area of the nervous system has been injured by disease, it is unjustifiable immediately to conclude that the function is localised in the area in question; this particularly refers to mental functions. For instance, sight is not "localised" in the eye or the optic nerve because it is lost when they are destroyed, nor should the memory for visual images be localised in the occipital lobe merely because visual defects follow a lesion in a certain portion of this. The

main part of the paper, which should be read in the original, is taken up with a discussion of aphasia problems, and an exposition of Von Monakow's diaschisis.
ERNEST JONES.

DIAGNOSIS OF DISORDERS OF THE CEREBELLAR AP-
(502) **PARATUS.** TOM A. WILLIAMS, *Archives of Diagnosis*,
Jan. 1910.

THE symptoms of diseases of the cerebellum are discussed, and the difficulties in diagnosis are emphasized. D. K. HENDERSON.

THE MENTAL CHARACTERISTICS OF CHRONIC EPILEPSY.
(503) ERNEST JONES, *Maryland Med. Journ.*, July 1910, p. 223.

IT is pointed out how unsafe it is to make the diagnosis of idiopathic ("essential") epilepsy purely on one feature of the disease, such as the fits, and that the mental and physical condition in the inter-paroxysmal periods should also be always taken into account. An account is given of the mental characteristics and stress laid on the typical association-reactions, from which a sure diagnosis can often be made. The amnesias present four distinctive features. They are much greater in extent than the degree of general intellectual impairment would lead one to expect; the field of memory, like that of interest, is concentrically retracted, in that matters of general knowledge are more forgotten than those of personal interest; there is little or no tendency to fill in the gaps by confabulation; and it is relatively easy to restore the forgotten memories by means of spinal methods. An account is given of Maeder's work on the sexual life of epileptics, in which an attempt is made to formulate the disturbances in psycho-sexual terms, as Freud has done for the neuroses and Jung for dementia præcox. Much light has been thrown on many of the mental abnormalities of the disease by correlating them with these more fundamental disturbances.

AUTHOR'S ABSTRACT.

ATTEMPT AT AN ANALYSIS OF A CASE OF HYSTERIA.
(504) (**Versuch einer Hysterieanalyse.**) L. BINSWANGER, *Psycho-analytisches Jahrbuch*, Band 1, 2^e Hälfte, S. 319.

THE analysis, the first half of which was previously published (see *Rev. of Neurol. and Psychiatry*, March, p. 197), is here concluded; it is the most extensive psycho-analysis that up to the present has been published. The article, which occupies 182 pages, does not lend itself to abstracting.
ERNEST JONES.

REMARKS ON A CASE OF COMPULSION-NEUROSIS. (Bemerkungen über einen Fall von Zwangsneurose.) FREUD, *Psychoanalytisches Jahrbuch*, Band 1, S. 357-421.

THIS important paper contains a number of suggestive and original remarks, particularly concerning the development and life-history of obsessions. It is impossible to abstract the paper here, and it should be read in the original by those who wish to learn the progress that has been made in our knowledge of this subject.

ERNEST JONES.

THE ANXIETY NEUROSES. A. A. BRILL, *Journ. of Abnormal Psychol.*, June-July 1910, p. 57.

BRILL gives here a short account of Freud's views on the anxiety states. The anxiety-neurosis, due to somatic sexual traumata, is a malady commonly but erroneously grouped under the term neurasthenia. In another class of case the anxiety is attached to certain definite ideas (phobias), and here an underlying psychic mechanism can be determined of the same kind as that present in ordinary hysteria; Freud calls this "anxiety-hysteria." Brill, who has investigated forty-three anxiety cases, fully confirms Freud's views as to the nature and ætiology of them. He briefly relates an interesting psycho-analysis of a case of hysteria, which was cured by this form of treatment.

ERNEST JONES.

STUDIES ON THE NATURE AND CAUSES OF SENILE DISORDERS OF GAIT. (Studien über Wesen und Grundlagen seniler Gehstörungen.) E. V. MALAISE, *Arch. f. Psych.*, Bd. 46, Ht. 3.

IN this article the author discusses in great detail the nature of senile disorders of gait, which he has studied in the service of Pierre Marie at Bicêtre, and the pathological anatomy of which he investigated in Alzheimer's laboratory in Munich. The article is very diffuse (pp. 901-1005), and considerable attention is given to the opinions of previous authors. After describing the usual gait of the senile, various typical disorders of gait are discussed in detail. (1) The gait with short steps, Marie's *marche à petits pas*, which the author calls brachybasia. He concludes that this type of gait is characteristic of lacunar atrophy of the brain, and is also observed in pseudo-bulbar paralysis. It depends upon a disorder of equilibrium, associated with a certain element of weakness. The lesions are, as a rule, small but numerous, and thus the

function is not destroyed, but the regulating activity is seriously interfered with. (2) The disorder of gait, type Petré. The patient here, too, walks with small steps, but in addition he has great difficulty in initiating the necessary movements, and after a few steps says that he can go no further, but can be urged to proceed; he requires to concentrate his attention on his gait. The author does not agree with Petré in considering that the disorder is essentially a neurosis, merely elicited by certain organic brain changes. The mental defects are closely allied to senile dementia, and are to be explained on an organic basis. (3) Senile disorders of gait of cerebellar origin. The author reports a case in which the gait was not only with small steps, but with broad base and staggering; the Purkinje cells had to a large extent disappeared; there were lacunæ in one hemisphere. He refers to analogous cases described by other authors. (4) Disordered gait in senile hydrocephalus internus. The gait of the patient, whose case is recorded, was cerebellar, and with small steps. (5) Senile disorders of gait on a basis partly or exclusively functional. In this connection astasia-abasia is discussed.

C. MACFIE CAMPBELL.

INVESTIGATION OF THE PATELLAR REFLEX IN MAN.

(508) (*Untersuchung des Kniesehnenreflexes beim Menschen.*) K. WEILER (of Munich), *Ztsch. f. d. ges. Neurol. u. Psychiat.*, Bd. 1, Ht. 1.

AN elaborate experimental study of the patellar reflex in health and in certain disorders. The author describes in some detail the methods of previous investigators (Jarisch and Schiff, Sommer) and shows their limitations. He discusses the conditions which must be fulfilled by any apparatus destined for this purpose, and describes the apparatus which he has devised for the purpose. No counterpoise is used to balance the weight of the leg, as this involves many fallacies. The movement of the leg on percussion is recorded by the rotation at the axis of the knee joint being transmitted to a wheel, and thus recorded on the revolving drum; this ingenious method of recording the extent of the movement makes directly comparable the curves obtained from legs of different lengths. On the drum the movement of the percussion hammer is also recorded, while the time intervals are given by the vibrations of a tuning fork. The author summarizes his results as follows:

1. Earlier methods for the study of the patellar reflex, including that of Sommer, are not sufficient for an exact and comparable record of the phenomenon.

2. The method described by the author makes possible an exact record of the movement, and the results obtained from different individuals are directly comparable.

3. The knee jerk is a true reflex; in health the reflex time varies between 0.05 and 0.07 seconds.

4. The reflex movement varies in the same individual even with uniform stimulus.

5. Strychnine shortens the reflex time, increases the extent of the movement.

6. Bromide increases the reflex time and diminishes the extent of the movement.

7. After a long walk there was slight increase of the reflex time and an unimportant increase of the extent of the movement.

8. In hysterical patients the reflex time was frequently shortened, the speed and extent of the movement increased, the fall of the curve strongly retarded.

9. The epileptic patients often showed similar results; in a condition of confusion there was a complete absence of any such retarding muscular contraction.

10. In manic-depressive insanity the curves varied very much. There was often diminished reflex time with marked retarding contraction during the descent of the curve.

11. Stuporous and demented cases of dementia præcox, as well as earlier cases, frequently showed a want of retarding muscular contraction in the descent of the curve; the reflex-time was not materially altered.

12. In general paralysis there were curves of various forms.

13. The curves registered showed very distinctly a tonic, a clonic, and a clonic-tonic type of patellar reflex.

14. The difference between organic and psychogenic ankle-clonus was rendered obvious.

C. MACFIE CAMPBELL.

LUMBAR PUNCTURE AND FRACTURES OF THE SKULL. (La (509) *Ponction Lominaire et les Fractures du Crâne.*) GUINARD, *Journ. de Méd.*, No. 28, 1910, p. 487.

THE writer describes the anatomy of the parts concerned in lumbar puncture, and details his method of procedure, which does not differ from that usually practised. In head injuries it affords diagnostic information, and is of value in treatment and prognosis. The puncture of a small vein by the exploring needle may lead to a false diagnosis of blood in the fluid withdrawn, to avoid which, three successive tubes are filled. The quantity of blood in each will be the same in genuine cases. In most cases of fracture of the skull, blood will be present in the fluid, but in fractures of

the vault, and after operations, it may be absent because the blood has not entered the subarachnoid space. On the other hand, blood may be present in the cerebro-spinal fluid after severe head injury unaccompanied by fracture. A deep red colour is of grave import; a slight and diminishing coloration gives a good prognosis. Daily extraction of fluid yields encouraging results in cases of fracture of the skull. Tension is relieved, and sometimes a sudden improvement in symptoms occurs. Not more than 20 c.c. should be removed at one time.

HENRY J. DUNBAR.

ALCOHOL AS A CAUSE OF HEREDITY TAINT. (*Der Alcohol (510) als Ursache der Belastung*). MAX SICHEL, *Neurol. Centralb.*, July 16, 1910, No. 14.

IN this article the author examines the records of 308 cases (225 male, 83 female) hereditarily affected by alcohol, out of a total of 2532 patients treated in the asylum in Frankfort during the years 1907-8. When the anamneses of these cases were taken alcoholism in the parents or near relatives was assigned by the friends as a cause of the illness; and though in many instances no authentic information was forthcoming regarding the form in which this alcoholism had appeared, yet the mere fact that it was referred to in this connection was of significance.

The following table shows the manner in which the patients were affected:—

Sex.	Chronic alcoholism.	Imbecility and idiocy.	Dementia præcox.	Man.-depr. insanity.	Epilepsy.	Hysteria.	Traumatic psychoses.	Paralysis and organic mental ailments.	Senile psychoses.	Other psychoses.	Psychoses and alcoholism.
Men	109	17	26	1	42	11	2	9	2	6	46
Women ..	14	15	18	10	5	12	—	5	3	1	7
Total.....	123	32	44	11	47	23	2	14	5	7	53
Per cent.	39·9	10·4	14·3	3·6	15·2	7·5	0·6	4·6	1·6	2·3	17·2

Two-fifths of the cases whose parents had been alcoholic gave way to the abuse of drink themselves. In another fifth alcohol played a part in the psychosis present. In a third of the cases the out-

break of delirium was the occasion of the patient's removal to asylum. In fifteen cases continued alcoholic excesses were the cause of epileptic seizures, which ceased under enforced abstinence. It was remarkable how seldom alcoholic neuritis was observed. This might perhaps be referred to the form in which alcohol had been taken, "Schnaps" not playing an important part. Similarly, Korsakoff's symptom-complex was a rare occurrence; while, on the other hand, it was frequently possible to recognise the presence of premature arterio-sclerotic changes in many instances.

The author gives data bearing on the comparative influence of heredity in alcoholic and other psychoses, and on the effects of alcoholism as seen in the third generation. The proportion of unfruitful marriages is remarkable. The relations of alcoholism to crime are then discussed. In comparing its incidence among persons of different religious persuasions, the author says that he does not think the explanations which have been given of the relative infrequency of alcoholic psychoses among the Jews satisfactory.

A. HILL BUCHAN.

GRAVES' DISEASE AND ADDISONISM, POLYGLANDULAR (511) SYNDROME FROM THYROID AND SUPRARENAL INSUFFICIENCY. (*Maladie de Basedow et Addisonisme totale, syndrome polyglandulaire par dysthyroïdie, et dyssurénalie.*) G. ETIENNE, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, 1910, xxix., p. 824.

THE patient was a man, aged 37, who had suffered from Graves' disease for ten years. His skin had always been dark, but his colour had deepened since the onset of the exophthalmic goitre. When seen by the writer his skin and buccal mucous membrane showed the bronzing characteristic of Addison's disease. There were no signs of pancreatic, testicular or pituitary disturbance, but there was slight enlargement of the thymus and some albuminuria. Considerable diminution of the bronzing followed the administration of the serum of a thyroidectomised goat, and the pigmentation became marked again on cessation of this treatment. In spite of the characteristic pigmentation, the long duration of the disease and the absence of asthenia prevented the case from being ranked as typical Addison's disease.

J. D. ROLLESTON.

ADIPOSIS DOLOROSA WITH MYXEDEMATOUS MANIFESTATIONS. HEINRICH STERN, *Amer. Journ. Med. Sci.*, March 1910.

A CASE is reported in which a synchronous abatement of the symptoms of both affections occurred after thyroid medication and general anti-obesity treatment.

D. K. HENDERSON.

PSYCHIATRY.**ON CHRONIC MANIC CONDITIONS ; A CONTRIBUTION TO THE**

(513) **STUDY OF ABNORMAL PERSONALITIES.** (Über chronisch-manische Zustände, zugleich ein Beitrag zur Lehre von den krankhaften Persönlichkeiten.) P. NITSCHKE (of Dresden), *Allg. Ztsch. f. Psychiat.*, Bd. 66, Ht. 1.

A CASUISTIC contribution to a topic of considerable importance. Some authors have called attention to the existence of cases of well-marked manic excitement of several years' duration (*e.g.* Schott with cases of 29, 24, 20, 15 years' duration); other authors have described cases of very mild chronic excitement with a manic colouring under the head of "chronic mania," "manic temperament," "constitutional inferiority of sanguine temperament," and have considered them as independent types of disorder within the large group of the constitutional psychopathic conditions; (of course the cases of chronic excitement of dementia præcox type described by the older authors, to which the term mania was at an earlier date applied, do not come into consideration). Kraepelin has considered the latter of these groups as closely related to his manic-depressive insanity. Nitsche in this communication brings forward a series of interesting observations: he divides his cases into four groups, for which he suggests provisional names.

(1) *Congenital Hypomania*.—In these cases there is observed from youth a true hypomanic condition which cannot be differentiated from those hypomanic conditions which occur as an early phase of a more severe manic attack or as an independent attack. Nitsche gives a summary of such a case which Siefert has published, and then reports the following case:—The patient (Case I.), a man of 72, had in the earlier half of his life had hysteriform attacks; from early manhood he had shown the same picture as when under observation in later years; he was elated, extremely talkative, boastful, subject to outbursts of anger, continually in conflict with the authorities, without other episodes of excitement and with no periods of depression. No motor excitement was present; the possibility that the disorder might have been of periodic occurrence in earlier life could not be excluded.

(2) *Progressive Constitutional Manic Condition*.—The individuals belonging to this group are from youth sanguine, self-assertive, volatile, enterprising; in the third or fourth decade these features develop into a condition of mild excitement, and finally, about 50, a well-marked hypomanic condition develops, which, in the cases recorded, had already lasted 12, 16 and 17 years. The constitutional peculiarities in earlier life appeared to be within the limits of health, but indicated the possibility of the later disorder. In

the early stage of the hypomanic condition the symptom picture is essentially the same as that described as "constitutional excitement." Case II., a merchant of 60, showed the same constitutional peculiarities as his father and one brother; was boastful, quarrelsome, eager for law-suits. At first an efficient salesman, he later became unduly enterprising, indulged in absurd speculations, was extremely active, very optimistic and self-confident; the failure of his schemes frequently caused short periods of depression. At the age of 50 a definite hypomanic condition developed; he showed considerable exaltation, over-activity, an unstable but elated mood, a variable megalomaniac trend with a tendency to distort past occurrences, no insight into his condition. The patient has been in this condition for 12 years, with an exacerbation at the age of 56.

Case III., a man of 64, whose father was insane, from early life (no details as to youth and early manhood) full of schemes and subject to outbursts of temper; in the fifth decade of his life these characteristics led to considerable friction with the environment. In the sixth decade he showed increased unrest, was no longer capable of well-regulated activity, was boastful, at times had ideas of reference and of persecution (? of alcoholic origin), was subject to moods, treated his family brutally. At the age of 56 there was an exacerbation of these symptoms, the patient presented the picture of a mild manic excitement of somewhat a typical form—unstable and irritable mood, boastfulness, ill-considered megalomaniac and utopian ideas, ideas of persecution, slight flight of ideas, excitability. The condition simmered down somewhat, the persecutory ideas disappeared, but the clinical picture has remained essentially the same for 13 years.

Case IV., a cigar-maker of 70, an illegitimate child, had always lived an ill-regulated life and been of a rather jovial nature. From the age of 40 he frequently came into conflict with the police as a vagrant and owing to acts of violence. From the age of 52 the patient was definitely hypomanic, and at the age of 55 the condition developed into a well-marked manic attack of two years' duration, which simmered down into a hypomanic condition. At the age of 62 he had another excited period of three and a half years' duration, which gave way to the previous hypomanic state.

(3) The third group of cases of chronic manic excitement includes two cases in which a hypomanic condition of abnormally long duration occurred as a phase in a circular attack. The author calls attention to the fact that in both patients the motor disorder was extremely insignificant in comparison with the other features in the clinical picture; in both a marked "querulant" tendency was present. The first patient was a single woman of 65, who for 27 years had been in this hypomanic condition;

expansive but irritable mood, with outbreaks of temper, witty remarks, ideas of being treated unjustly, with demands for justice, continual scolding and carping criticism, a definite erotic trend, plans for marriage, and a never-failing optimism, no definite flight of ideas. This condition came on after a depression which lasted for over two years.

In the second case, a merchant of 61, of bad heredity, the constitution at an early age showed a psychopathic egotism; at the age of 35 his peculiarities became more aggressive, he passed into a condition of mild excitement, and later, at the age of 39, had an acute psychosis characterised by agitated depression with some expansive ideas. The psychosis after two years simmered down into a peculiar chronic hypomanic condition, which persisted until his death at the age of 61. In this case we have to deal with an individual of an expansive psychopathic constitution, with an attack of circular insanity in which two hypomanic phases of abnormally long duration were separated by a period of agitated depression.

(4) The fourth group of cases includes patients who show a symptom-picture in which the features of manic excitement are present, but in such a mild degree as barely to constitute a psychosis; the term "constitutional excitement" is given by the author to these patients. They show mild motor over-activity, busy but inefficient and ill-regulated conduct, social instability, irritability, a quarrelsome disposition; in more severe cases there may be a mild type of flight of ideas; the mood is, as a rule, elated and labile, with a tendency to outbursts of rage. The condition does not always remain at the same level, and periods of well-marked manic excitement may occur; such acute attacks occurred usually about the age of 30. One exceedingly important case in this group is that of a young woman, who at the age of 10 developed the features described above as characteristic of the group; at the age of 15 she had to be admitted to the clinic, and there her condition was clearly hypomanic, although it required continuous observation to enable the physician to adequately appreciate the symptoms. The condition was not permanent; she gradually improved and was able to work efficiently as a domestic servant, and no longer showed the symptoms which had existed for the previous six years, *i.e.* since the age of 10.

The reports of the cases are followed by a general discussion of the relation of the conditions described to other disorders, to manic-depressive insanity, to the "pseudo-querulants" (Kraepelin), to paranoia, to Kahlbaum's "heboid" disorder, to the hysterical constitution, to the large group of constitutional anomalies of mood.

C. MACFIE CAMPBELL.

TRAUMA, DEMENTIA PARALYTICA AND COMPENSATION

(514) **FOR INJURY.** (Trauma, Dementia paralytica und Unfall-rente.) FR. GERLACH (of Königsutter), *Allg. Ztsch. f. Psychiat.*, Bd. 69, Ht. 1.

A TRAUMA, although *per se* unable to cause general paralysis, may render incapable of employment a man with latent general paralysis who has hitherto been more or less efficient; therefore in some cases claims for damages on the ground of inability to work owing to trauma may justly be awarded.

C. MACFIE CAMPBELL.

SYPHILITIC ERUPTIONS IN TWO CASES OF GENERAL

(515) **PARALYSIS.** (Éruptions syphilitiques chez deux paralytiques générales.) TRENEL and LIBERT, *Progrès méd.*, 1910, p. 430. (Soc. clin. de méd. ment.)

THE first patient, whose general paralysis had developed two years previously, showed the recent scars of a late secondary eruption. The second patient, whose symptoms had developed four months previously, showed tuberculo-crustaceous lesions on the wrist and seborrhœiform lesions on the lip.

J. D. ROLLESTON.

ON DEMENTIA PRÆCOX ON THE GROUND OF IMBECILITY.

(516) (Über Dementia præcox auf dem Boden der Imbezillität.) W. PLASKUDA (of Lübben), *Allg. Ztsch. f. Psychiat.*, Bd. 67, Ht. 1.

OUT of 100 cases of dementia præcox the author found 15 who from youth had been defective, had learned poorly, or had made an impression of being feeble-minded. He gives extremely brief reports of these cases. The symptomatology is not different from that seen in cases which have developed on an apparently satisfactory constitution. The hebephrenic and catatonic forms are the more common. This group must not be confused with the early forms of dementia præcox, and the imbecility is not to be considered as an early manifestation of the later disease. The wider question of the constitutional basis of dementia præcox in general is not discussed by the author.

C. MACFIE CAMPBELL.

ON DELUSIONS OF JEALOUSY AND PARANOIA. (Beiträge

(517) zur Kenntnis des Eifersuchtwahns mit Bemerkungen zur Paranoiafrage.) E. MEYER (of Königsberg), *Arch. f. Psych.*, Bd. 46, Ht. 3.

THE author reports a number of cases in which delusions of jealousy were a prominent feature. Alcoholism is frequently an

important etiological factor in such conditions, but the same delusional trend may arise on the basis of other toxic causes, *e.g.* chronic lead intoxication, and also in conditions where no exogenous toxic factor seems to be at work, *e.g.* in involution and senile conditions. Meyer reports some cases of dementia præcox where delusions of jealousy were prominent; it is not easy to see why he reports case 13; the patient talked of having been hypnotized by her husband, but there is no evidence in the record of ideas of jealousy being prominent; yet the author says "ideas of jealousy play a great rôle in this case." The case is not even convincing from the point of view of diagnosis. After reporting a great number of heterogeneous cases, the author discusses, in a very diffuse manner, the general topic, and gives no special conclusions.

C. MACFIE CAMPBELL.

BLOOD-PRESSURE IN THE INSANE. (*Blutdruckmessungen an (518) Geisteskranken.*) W. MORGENTHALER (of Waldau), *Allg. Ztsch. f. Psychiat.*, Bd. 49, Ht. 1.

THE conclusions of the author are guarded and to a certain extent negative, and suggest the necessity of receiving with caution definite statements that the blood-pressure in certain mental disorders has constant characteristics.

C. MACFIE CAMPBELL.

TREATMENT.

TREATMENT OF CHOREA IN CHILDREN. JOHN ALLEN, *Amer. (519) Journ. Med. Sci.*, Feb. 1910.

IN addition to rest, isolation and dieting, the writer has found acetyl-salicylic acid to be the drug *par excellence*. For a child at or about puberty 90 to 120 grains may be given per day.

D. K. HENDERSON.

THE PSYCHO-ANALYTIC METHOD OF TREATMENT. ERNEST (520) JONES, *Journ. of Nerv. and Ment. Dis.*, May 1910, p. 285.

THIS method of treatment is based on the knowledge that psychoneurotic symptoms are due to mental conflicts centering around various repressed desires; they represent, in a disguised form, the automatic activity of these unconscious desires. The aim of the treatment is to lead the repressed complexes into consciousness; if this is accomplished, the symptoms, being symbolic substitutes for them, permanently disappear. A general account is given of the method, its indications and limitations.

AUTHOR'S ABSTRACT.

NURSING FOR THE NEUROLOGIST. TOM A. WILLIAMS, *The* (521) *Trained Nurse and Hospital Review*, June 1910.

AN address to nurses warning them of a psychic factor in certain neurological cases, and laying down some fundamental principles to guide them in the nursing of such cases.

D. K. HENDERSON.

Notice of Meeting

THE annual meeting of the *International League against Epilepsy* will be held in Berlin on October 4 and 7, 1910, at 2 P.M., in the lecture theatre of the Psychiatric Clinic of Professor Doctor Ziehen.

Professor Tamburini (Rome) will act as president.

The business before the meeting consists mainly of the reception of the reports from the International Committees upon the work of the league in the different countries, with reference to the prevalence of epilepsy, the numbers of the existing institutions for epileptics, etc. Communications will also be received from Dr Veith (Berlin) upon epilepsy and crime, and from Dr Muskens (Amsterdam) upon the patho-physiology of epilepsy. A complete programme will be issued later on.

BOOKS AND PAMPHLETS RECEIVED.

- Jelliffe. "The Thalic Syndrome" (*Med. Rec.*, Feb. 19, 1910).
 Jelliffe. "Dementia Præcox" (*N. Y. Med. Journ.*, March 12, 1910).
 Jelliffe. "Notes on the History of Psychiatry" (*Alienist and Neurologist*, Feb. 1910).
 "Neuropathological Papers, 1909" (Harvard University, Medical School).
 Cassirer and Otto Maas. "Beitrag zur pathologischen Anatomie der progressiven neurotischen Muskelatrophie" (*D. Ztschr. f. Nervenheilk.*, Bd. 39).
 Otto Maas. "Beitrag zur Kenntnis der Recklinghausenschen Krankheit" (*Monatsschr. f. Psychiat. u. Neurol.*, 1910).
 Petré. "Beiträge zur Kenntnis der Syphilis der Wirbelsäule und de Basis cranii" (*Mitt. a. d. Grenzj.*, H. 5, 1910).
 Curt Keyser. "Über familiäres Auftreten postdiphtherischer Lähmung." Inaug.-Dissert., Strassburg, 1910.
Alienist and Neurologist, Aug. 1910.
 Ernani Lopes. "Contribuição ao Estudo da Apraxia." Thèse Inaugural, Rio de Janeiro, 1910.

Review
of
Neurology and Psychiatry

Original Articles

**TUMOUR LIMITED TO THE ARM CENTRE, WITH
A DISCUSSION OF THE RELATION OF THE
BABINSKI REFLEX TO MOTOR LESIONS, IT
BEING PRESENT ONLY IF THE LEG FIBRES
ARE IMPLICATED.**

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Philadelphia General Hospital.

(With Plate 21.)

THE following reasons justify the report of this case: 1st—It furnishes evidence to support the view that the cortical fibres controlling the upper limb are situated nearer the longitudinal fissure than at one time was thought to be the case. 2nd—On account of the opportunity given to locate the position in the pyramidal tract of the fibres coming from the arm centre. 3rd, and most important—That the Babinski reflex was absent when the arm and face were alone paralysed, and did not become apparent until the fibres in relation to the leg centre became implicated, proving the important fact that *the Babinski reflex can be obtained only in those motor lesions in which either the leg centre or the fibres in relation to it are involved.*

The history of the case is as follows :

W. M'G., 50 years of age, and a labourer by occupation, was admitted to the Neurological Department of the Philadelphia General Hospital on March 29, 1907. His only complaint at this time was loss of power in the left arm.

There was nothing of any significance in his family history.

He had been an excessive user of alcohol and tobacco, but denied venereal infection. For the preceding four years he had an anal fistula, and at different times suffered from attacks of rheumatism. Ten years before admission he fell downstairs and broke his left arm at the wrist, the use of the arm after this being somewhat impaired, his own statement, however, being contradictory as to its extent, but his wife stated positively that it had become well, and that he had good use of the arm until two weeks before coming to the hospital. Two years before admission he fell from a car, striking his head, and was unconscious for several hours. Since then he had a good deal of headache, and his disposition changed markedly, becoming irritable and subject to outbursts of temper without cause.

He first noticed weakness in the arm while chopping wood, and thought he had sprained it. It became gradually worse, and when he entered the hospital the arm was powerless. A cursory examination at this time showed no weakness excepting of the arm.

One week after admission (4/7/07) he was suddenly seized with violent spasmodic movements of the left arm, followed by similar movements of the facial muscles, with loss of consciousness and severe headache. He stated positively that he never had had a similar attack. Within the following two days he had two more which began with twitchings of the left eyebrow, followed by involvement of the face and arm. He also complained of more or less dizziness.

Examination at this time showed a sluggish reaction of the pupils in convergence and to light, slight drooping of the angle of the mouth on the left side, inability to draw it to the left as well as to the right, and to close the left eye as well as the right. The masseters on the left side seemed slightly weaker than those on the right. The tongue was not affected. The left arm was powerless and slightly rigid. The triceps, biceps, and wrist jerks were greater on the left than on the right. He could perform all movements of the left leg with

nearly normal power. The knee jerk was slightly increased on this side. The Achilles jerks were equal and normal. The plantar reflexes were sluggish, and *all of the toes were plantar flexed*. Fibrillary tremors were noticed in the left deltoid. There was no pain or sensory impairment.

On 4/10/07 his eyes were examined, and, with the exception of slight nystagmus in the right eye on fixation and slight drooping of the eyelids, were normal.

On 4/12/07 it was noticed that the great toes of both feet were kept in a position of hyperextension, and the other toes were extended at the first phalanges, the second and third being flexed. The feet were markedly plantar flexed. This was greater on the left side than on the right. The mouth was more drawn to the right than in the previous examination, and the rigidity of the arm was more marked.

On 4/14/07 the patient became semi-stuporous, and marked, but not complete, weakness of the left leg was noticed. Irritation of the sole of the left foot caused *dorsal flexion of the great toe* and plantar flexion of the others, this being the first appearance of the Babinski reflex.

Two days later the eyes were again examined and found normal, excepting possible weakness of lateral movements which may have been due to lack of attention. Closing the left eye and wrinkling the left side of the forehead were also impaired. On 4/15/07 he was still stuporous, and for a number of hours had marked clonic contractions of the left biceps with movement of the arm. On 4/17/07 he had a similar attack associated with spasm of the flexors of the fingers. On 4/22/07 it was noted that he was much less stupid, and until 4/26/07 was better. On that date he had a severe spasm, involving only the left arm and lasting eight minutes. During this attack he was conscious, and stated that the contractions were painful. After this he became stuporous again, and conjugate deviation of the eyes and head to the right were noted.

Operation being then consented to by his wife, it was performed by Dr Swartz. The motor area of the right side was exposed by making an osteoplastic flap, but the patient's condition became so bad that the growth could not be removed, and he died two hours later.

When examined after death a tumour was found 18 × 20 cm.

in the upper portion of the precentral convolution. It could be easily enucleated and was hard to touch. Microscopic examination showed it to be a carcinoma. Because of the growth there was some separation of the pre- and post-central convolutions, and the Rolandic fissure could be easily made out, as is shown in the photograph.

Horizontal sections of the brain showed that there were carcinomatous nodules elsewhere, as in the frontal and occipital poles, and there was one also in the corpus callosum. The tumour was evidently secondary to a carcinoma of the œsophagus.

A study was made of the secondary degenerations in the internal capsule, crus, pons, and medulla. The spinal cord was unfortunately not obtained. In the internal capsule a slight degeneration was found in the anterior two-thirds of the posterior limb. The degeneration was greatest near the knee, and became less away from it. There was also some degeneration of the radiating fibres of the thalamus, this being in apposition to the degeneration in the internal capsule. In the cerebral peduncle a slight degeneration was found in the second and third fifths of the foot, it being greater in the second than in the third fifth. In the pons there was a slight degeneration of the motor fibres, this being confined entirely to those near the raphe, and involved equally the anterior, middle, and posterior portions. In the medulla there was a slight degeneration, but this was not marked, and was found in all parts of the pyramid. The cranial nerves were normal. The above degenerations were obtained by the Weigert-hematoxylin method, as by the Marchi nothing was found.

From the pathological standpoint the tumour is interesting because of the fact that it could have been readily removed by operation, it forming a cavity for itself and being easily enucleated.

Remarks.—The early observers believed that the centres for movements of the upper limbs occupied the middle third of the ascending frontal and possibly of the ascending parietal convolutions. Thus J. M. Charcot and A. Pitres in 1877 (1) said that the arm centre was located in the middle third of the ascending frontal convolution, and report a number of cases of cerebral monoplegia in which the lesion was so situated. In 1879 these same authors published another paper (2) in which this position



To illustrate Paper by Drs Potts and Weisenburg.

1

2

3

4

is affirmed, although in one of their cases the lesion is stated to be in the superior part of the ascending frontal gyrus.

In 1883 (3) they collected another series of cases, and stated that, while the arm centres are located in the middle third of the ascending frontal convolution, some studies of brachial monoplegias seem to indicate that the centre may lie a little above this, and, in truth, several of their cases undoubtedly support this latter view. Notably are six cases (LXIII., LXIV., LXVI., LXVIII., LXIX., LXX.) in which the leg first became weak, followed later by weakness of the arm. The lesion involved the paracentral lobule and the upper part of the ascending frontal, and in some cases also of the ascending parietal. In one case (LXX.) the lesion extended from the ascending parietal for a distance of 2 cm. only.

Later studies seem to show that the arm centre occupies a large part of the convolution, and extends nearly to the longitudinal fissure. Thus Lloyd (4) faradized the ascending frontal convolution to within 3 cm. of the longitudinal fissure without causing contraction of the leg muscles. Mills and Frazier (5), after faradizing the cortex in several cases in which the brain was exposed to very near the longitudinal sinus, say that "the area for the upper extremity is undoubtedly the largest of the main sub-divisions of the motor zone; the lower extremity is only represented on the lateral surface of the hemiserebrum by a comparatively narrow strip of the precentral convolution, but it has a considerable representation on the mesial aspect. The face and arm occupy three-fourths of the precentral convolution, the trunk and leg one-fourth. The leg area does not extend more than one-half to three-fourths of an inch from the longitudinal sinus.

Without attempting to review the voluminous literature on this subject, the foregoing shows that in many cases at least the arm centre consists of more than the middle third of the convolution. The case now reported substantiates this view, Figs. 1 and 2 showing the growth, which was hard and encapsulated, to be situated high up in the convolution.

It is worthy of attention that the paralysis was confined to the arm for several weeks, the face becoming slightly weak before the leg was involved at all, and this did not occur until two weeks after admission. The convulsions always began in

the arm, and some of them were confined to it. These facts seem to show that the leg centre was little, if at all, directly affected, the weakness of the limb, when it did occur, being due to pressure. That it was not affected until late is further shown by the absence of the Babinski reflex. It is probable that the weakness in the leg was the result of the implication of sub-cortical fibres, inasmuch as the tumour was of considerable depth, and probably destroyed them by pressure.

This case also emphasizes the importance of early operation after the diagnosis is made. The man was in excellent condition when operation was first suggested, but within a week he became stuporous, and failed very much physically. As it turned out, removal of the growth in the motor cortex, which could easily have been done, would have resulted in no permanent cure.

A number of features of the paralysis were also interesting. While in the beginning of his illness the arm only was paralyzed, later on the face became involved, and the interesting feature was that, while the weakness was greater in the lower distribution, there was *always* weakness in closure of the left eyelid and wrinkling the brow. Besides, the contraction of the left masseter was weak. The pterygoids were normal. While it is not unusual to have temporary weakness in the upper branch of the seventh nerve and of the masseter immediately following a hemiplegia, we are unaware that permanent weakness in these muscles has previously been observed as a result of a cortical lesion.

The most interesting feature, however, of the case was the development of the reflex hyperexcitability, and especially the Babinski reflex. It is fortunate indeed that opportunity was given us for accurate observation. When the patient was admitted he had weakness only in the left arm, which later extended to the face and the masseter, the tongue escaping. Power was entirely lost, but the limb was rigid, and the triceps, biceps, and wrist jerks were much increased. At first the left knee jerk was slightly increased, the Achilles jerk being normal, while the plantar reflex was sluggish, the toes flexing normally. Gradually there developed a hypertonicity of the left leg, and the great toes of both feet assumed a position of hyperextension, the other toes extending at the first phalanges, the second and third being flexed. This, however, was more marked in the

left leg. At this time also the rigidity in the left arm was much greater. Two days later it was observed that the left leg was weaker than it previously had been, and that irritation of the plantar surface then caused a dorsal flexion of the great toe for the first time.

In other words, in view of the necropsy finding, it is evident that the subcortical fibres of the leg were first irritated, there resulting first an increase of the patellar jerk, later hypertonicity of the whole leg with extension of the large toes on both sides, but especially on the side opposite the lesion; and as there gradually occurred a destruction of fibres, there appeared a weakness in the related limb with a greater reflex excitability and hypertonia and the presence of the Babinski phenomena.

It is evident then that the Babinski reflex only occurs in those cases in which the leg fibres are implicated, and that it should not be looked for when the arm or face fibres alone are diseased, and yet, simple as this fact seems, this has not been previously recognised. Not only that, but it is evident from the gradual development of the reflexes and hypertonicity that the Babinski reflex only occurs when the fibres in relation to its arc are implicated, as, for example, in this case there was first present an increased patellar jerk, then hypertonicity of the whole limb with hyperextension of the great toe, and finally the Babinski reflex appeared.

This teaches that an increase or the presence of a particular reflex like the patellar or the Babinski only occurs when the motor fibres in relation to its particular arc are involved.

We have no desire to refer to the voluminous literature on the Babinski phenomenon, and we will only refer to the last paper which deals with this subject. Bergmark (6), in an excellent paper on Cerebral Monoplegia, discusses the occurrence of the Babinski reflex in cortical lesions, and states that there are undoubted cases of cerebral paresis in which this reflex is absent.

He further states that this sign did not appear in seven out of his eighteen cases of cortical disease. An analysis of these cases, however, most of which are clinical, shows that the leg was not involved. In four cases in which Babinski was present, there was paresis of the leg. This, in general, is what we found in other similar cases in the literature.

The above facts explain the many instances of motor lesions in which the Babinski reflex has been absent, and also have a direct bearing upon its elicitation. Since its original description there have been many methods described which produce extension of the large toe.

The fact of the matter is that in the usual motor lesion in which the leg fibres are involved, the Babinski reflex can be obtained only by plantar excitation, because the irritation in such case is directly in its arc. In the more severe cases—that is, those in which all the leg fibres are implicated or in which there is a cortical or subcortical irritation of the leg fibres—it is possible to obtain extension of the large toe not only by plantar, but by irritation of any part of the leg below the knee and sometimes even of the thigh. In fact, in such cases any movement of the lower limb, as flexion of the thigh on the abdomen, will cause an extension of the large toe, and, as was present in this case, it is not unusual to see permanent hyperextension of the large toe preceding the actual demonstration of the Babinski.

There is also a direct relation between the development of increased tonicity and of reflex hyperexcitability, this including the development of the Babinski. Bergmark, in discussing this subject, quotes Monakow and other authors who seem to be of the opinion that in any motor lesion there is at first increase of reflexes, later a hypertonicity, and finally contracture, and, according to Monakow, the hypertonus is more marked the nearer the lesion lies to the spinal cord and the greater the motor destruction. Bergmark, in a study of his cases, comes to the conclusion that there is a difference in the hypertonicity and reflex excitability between the capsular and cortical cases, for in all of the former, with the exception of one, there were present marked hemispastic symptoms, while among his cortical cases, only in two was there an increase of reflexes comparable to that usually met with in typical hemiplegia. An analysis of these two cases shows that in one the leg was involved, and in the second, while the lower limb was not directly implicated, the symptoms were the result of a uremic intoxication.

After discussing the various causes which might lead to the absence of hyperexcitability of reflexes, and after eliminating many of his cases because of their nature, he states (p. 461) that nine cases of cortical lesion still remain in which the ex-

planation previously given in the literature is not sufficient for the non-appearance of the usual reflex excitability. In three of these the reflexes were equal on both sides, while in six they were slightly increased. An analysis of these cases, however, shows that in the first three in which the reflexes were equal on both sides, the leg was not at all implicated, and that in the six in which the reflexes were increased, there had been a previous implication of the leg. He further quotes Case 5 (p. 462), in which there was a cortico-vascular lesion involving the arm centre with limp paralysis of the arm and absent reflexes and tone, but in which the leg was paretic, with increased reflexes and the presence of Babinski, because of implication of sub-cortical leg fibres. This case suggests to him the possibility that a cortical lesion may influence reflexes, and he comes to the conclusion that in those cases in which the cortex is involved in a vascular lesion, the reflex hyperexcitability and tone may be diminished, but that in subcortical lesions it is increased. Finally, he makes this statement: "Neglecting those of my cases I have adversely criticised, one point stands out in all the remainder where the expected increase of reflexes did not occur. In every case the lesion was localised to the cortex."

The fact of the matter is that the reason that in his cortical cases there was not present an increase of reflexes was because there was not involvement of the leg fibres. While Bergmark does not say so, it is evident that when he refers to increased reflexes, he means those of the lower limbs, for in all, with the exception of Case 5, the arm reflexes were present or increased, and we disagree with him entirely in his conclusion that in cortical cases the reflex hyperexcitability is decreased, but believe that the reflex hyperexcitability and hypertonicity are comparable with the degree of the paralysis, this being also the conclusion of v. Monakow.

It is only rarely that an opportunity is given to trace secondary degenerations in isolated lesions of the precentral convolution. The degenerations found in this case conform with the laws formulated by Dejerine in 1892, in which he stated that secondary degenerations resulting from cortical lesions in the Rolandic area, if located in the precentral lobule and in the superior portion of either pre- or post-central convolutions, would occupy the thalamic region, the posterior part of the

posterior segment of the internal capsule, and in the foot of the cerebral peduncle the two external fifths, and that in a lesion of the middle part of the Rolandic area the degeneration would occupy the anterior portion of the internal capsule and the internal border of the cerebral peduncle. Further, he states that the second and third internal fifths of the foot of the cerebral peduncle are formed by the fibres from the cortical zone in the upper limb. So far, then, the degenerations in this case correspond exactly with the views of Dejerine, as in the internal capsule the degeneration was near the knee and in the foot of the cerebral peduncle in the second and third internal fifths, especially in the second.

In the pons the degeneration was limited to the median fibres near the raphe and in the medulla the degeneration was diffuse, and the pyramid was not smaller than on the other side.

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6. *Brain*, 1910, Part cxxviii., Vol. xxxii.

THE VISCOSITY OF THE BLOOD IN EPILEPSY.

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I. Historical.

It is only within the last few years that any serious attempt has been made to investigate the viscosity of the blood, and to find out what importance, if any, could be attached to the variations in the fluid friction of the blood in health and disease.

Prior to this period a few physiologists did pay attention to this subject, but the results of many of these have been ignored on account of the difficulty encountered by the coagulation of the blood. Defibrinated blood, or blood to which an anti-coagulator had been added, was used in later investigations.

In 1896, Nicolls, working with defibrinated blood, confirmed the results of Ewald, who stated that the blood viscosity was about five times that of water. In the following year Lewy gave the value as three and a half times that of water. It will be noticed later that the results of different authorities vary considerably.

Denning and Watson carried out an elaborate research, and they stated that an increase in the number of the corpuscles causes an increase in the viscosity, and that certain chemical substances increase it, while others lessen it.

Hess found that the mean viscosity value in healthy individuals was 4.5 times that of water, with a tendency at the extremes of life to be less than in the middle-age periods. This is confirmed by Bachmann, who thought that nourishment and exercise caused changes in the blood.

The researches of Webber and Watson show that the number of erythrocytes is not without influence. Rotky, on the other hand, is not of the same opinion, and the works of Bence and Determann confirm this. The latter states that the changes are due, not to the number, but chiefly to the size and form of the corpuscles, which hold substances which determine the degree of viscosity under different circumstances. Osmotic tension between them and the plasma is also important. Determann showed that when the blood is laked the viscosity is greatly increased. This is due to the corpuscles being destroyed and the viscous substances being set free. The variations in the viscosity of the serum are much less than those of the blood.

Venous blood is more viscous than arterial blood, and that is thought to be due to an increase in the size of the corpuscles, to their giving out their highly viscous substances, and to their taking up H_2O from the plasma.

CO_2 passed into blood plasma makes very little difference in the value of the viscosity.

Rotky, Hirsch, and Beck found the mean average viscosity value to be 5.1, but they took the blood from a vein. Bence

put the value at 5·4, and Determann at 4·7 in men and 4·5 in women.

Hess states that the results obtained by these observers are too high, and that the hirudin they used to prevent coagulation retards the flow of blood.

Neither in the specific gravity nor in the hæmoglobin count is there a safe analogy of the inner friction of the blood, although Blanschý says that if the percentage of hæmoglobin be divided by the viscosity value it gives an indication if a pathological condition is present. The result, he says, should be between 17 and 21 in a normal person. The viscosity is not affected by the blood pressure.

II. Viscosity in some Morbid Physical Conditions.

In pneumonia the viscosity is lower after the crisis than before it, and this has been ascribed by some to the CO₂ in the blood, but it has been pointed out that frequently it is much higher in mild cases than in severe cases. Oxygen inhalations have been found to diminish the value of the fluid friction in these cases, and in one observed by Ferrai there was a great lowering of the viscosity without a decrease in the number of the corpuscles. Sodium iodide, however, had been given to this patient for two days.

In chronic interstitial nephritis the viscosity values are low, and this is due to hydræmia which is present.

Rotky found in a case of acute nephritis an increase both of the blood and of the plasma. This he thought might be due to waste products circulating in the blood.

Naturally a considerable amount of work has been done in blood diseases, and it has been found that in most cases of anæmia there is a definite lowering of the viscosity, but the red corpuscles do not always show a corresponding reduction in number, nor is there a constant lowering of the plasma viscosity in these cases.

Where there is a very high leucocyte count, as in cases of leukæmia, the viscosity is raised; but Bence was unable to find any increase in a case of leucopænia during the leucocytosis of digestion.

In jaundice the fluid friction value is high, and in cases of

heart-disease with valvular lesion it is raised when the patient is allowed out of bed.

Graham Brown carried out a series of observations which show that with a rise of temperature the rate of the flow of blood is increased. He accordingly suggests that "a febrile temperature may be considered as a boon to the organism in that it will either allow the blood to circulate faster or it will save the work of the heart."

There is no uniformity of opinion as to the viscosity before and after food.

It is of interest to note what Fano and Rossi pointed out, that removal of the thyroid gland brought about only a slight increase in the viscosity, but when the parathyroids were removed the viscosity rapidly increased. They assume that this property of the blood is normally affected very largely by the internal secretion of these glands.

III. Viscosity in Epilepsy.

From what has been said it is evident that there is not known any one factor which influences the blood viscosity. It has been suggested by some that toxines, metabolic or otherwise, may play an important part in its value, and as epilepsy is considered toxic in origin, it may be interesting to note what is found in this disease.

The viscosimeter which I used is that invented by Hess, and is described in the appendix.

With the assistance of Dr Scott Watson, a series of observations was carried out almost daily for several weeks on fifteen cases of epilepsy, on thirty-five cases of various forms of mental diseases, and on six members of the staff, *i.e.* a total of fifty-six, twenty-nine of whom were males and twenty-seven females.

These were done in the wards, and the temperature of the room never varied more than a few degrees, so that this had no influence on the reading of the viscosity.

Table I. gives the average reading of the different diseases.

TABLE I.

Showing Average Viscosities in 56 cases examined.

15 cases of epileptic insanity	. . .	4.8
2 " " general paralysis	. . .	4.4
9 " " melancholia	. . .	4.3
13 " " dementia præcox	. . .	4.2
1 " " mild delirious insanity	. . .	4.2
3 " " simple mania	. . .	4.2
5 " " secondary or organic dementia	. . .	4.1
2 " " delusional insanity	. . .	4
6 " " healthy persons	. . .	4.2

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56

In 46.6 per cent. of epileptics, viscosity was from 5 to 5.9.

In 2.4 per cent. of all the other cases, viscosity was 5.3.

Of all these diseases epilepsy was the one which gave the most interesting results. Its mean viscosity value was 4.8. While seven of the fifteen cases gave results varying from 5 to 5.9, only one of all the other cases examined, *i.e.* forty-one in number, had a viscosity higher than five times that of water. In other words 46.6 per cent. of epileptics had a viscosity above 5, and only 2.4 of all the others gave a similar result.

Moreover, not only was the blood value in these epileptics high independently of fits, but it was very evident that it rose to a very high level prior to a fit in very many of these cases, although not in all. This is seen in Table II.

TABLE II.

Case I.

Average viscosity	. . .	4.4
$\frac{1}{2}$ hour before a fit	. . .	5.7
20 minutes after fit	. . .	5

Case II.

Average viscosity	. . .	3.8
2 hours before severe fit	. . .	4.9

Case III.

Average viscosity	.	.	.	.	4·4
11 A.M.	.	.	.	.	3·7
2 hours later, and just before fit	.	.	.	.	4·5
1 hour later	.	.	.	.	4·1

The viscosity value was highest in those epileptics in whom the seizures were most severe and most frequent. Indeed, in those patients who had a very occasional fit it was only slightly higher than that of a healthy person. That this condition was not dependent on the bromide which was administered to the epileptic patients was proved, because if the drug were stopped the viscosity remained high even after many weeks, and because the same high value was not found in other classes of patients to whom was given a similar dose of bromide.

Although a large series of blood counts was made, I have not been able to observe any connection between the number of the red or white corpuscles or the hæmoglobin and the viscosity, or between it and the blood pressure.

I examined the blood of only two general paralytics and found the average to be 4·4, but in one of these it was as high as 5·8 about half an hour after a congestive seizure.

In regard to cases of dementia præcox, I have not been able to observe any noteworthy facts in the different types of the disease. In this the rate of flow was 4·2 times that of water.

It is of great interest to find that among the cases of mania and melancholia the viscosity was much higher in those who were acutely ill; *e.g.* the average reading in the former class was 4·2, and the two patients who exhibited the greatest degree of mental excitement gave average readings of 4·5 and 4·6 respectively. The mean among the melancholics was 4·3, but 4·6 and 4·8 were the viscosity values of those most acutely ill.

In these cases also blood counts were made, but the number of the corpuscles did not appear to influence the viscosity results.

IV. Conclusions.

It seems to me, therefore, from the examination of the blood of these fifty-six cases, that one is justified in affirming that in

epilepsy there is present in the blood some factor affecting its viscosity, and that this is absent from the blood of other cases, or is present in a much smaller amount. The most probable explanation, I think, is that this is a toxine, bacterial or metabolic, circulating in the blood, and this is in conformity with the view held by many regarding the causation of this disease.

This toxine, it will be noted then, is present in the blood of epileptics to a far greater extent than in any other class of case examined; that it is most abundant in those suffering from frequent and severe fits; and that the toxicity of the blood increases to a very marked extent prior to the onset of a seizure.

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APPENDIX.

DESCRIPTION OF INSTRUMENT.

Two parallel glass tubes, A and B, of unequal length, are fixed to an opalescent glass stage, C, and though open and separate at one end, at the other they are connected by a U-shaped piece, D, which joins them at right angles to the stage upon which they lie.

To this U-shaped piece there is fixed a rubber tube, P, which is attached to a rubber ball, K, by means of a glass joint, S. This glass piece has an opening, N, which can be closed by one's finger, and so by means of the bulb suction is obtained.

Thus it will be clear that whatever pressure the bulb exerts acts equally on both glass tubes, but the apparatus has a stopcock, F, near the longer of the two tubes, by which it can be shut off from the pressure of the bulb, which

then acts only on the shorter tube, *i.e.* on the one used for blood. The longer tube is used for water.

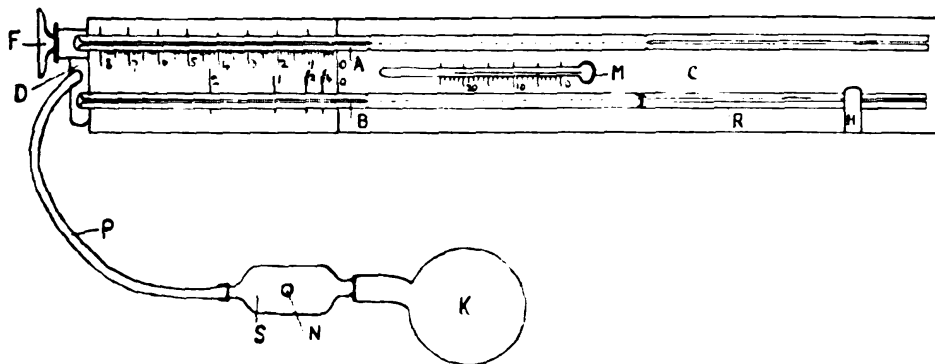
For a little less than a third of its length tube A is graduated, as is also tube B. The graduation begins at 0 in both tubes, and at exactly the same level. In the tube for water—*i.e.* tube A—the graduation extends up to 8, each unit being divided into tenths.

In tube B, however, it is carried up to 2, and only the first unit is subdivided into a quarter and a half. The mark 2 of the blood tube corresponds to 4·3 on the water tube.

The calibre of these two tubes is not the same throughout. In tube A the finest lumen is found in the middle third, while in tube B this is in the non-graduated portion.

Between the two tubes is placed a thermometer, M, for registering the temperature of the air at the time the observations are taken. There is a metal clip, H, for holding a capillary blood tube, R.

VISCOSIMETER
(WALTER HESS)



MODUS OPERANDI.

Pure distilled water is used for these observations. Some is taken into a small glass tube, and with the stopcock vertical is sucked up to mark 0 of tube A. The stopcock is then turned horizontally, so shutting the water tube off from the action of the bulb. Some blood is now taken from the finger or ear of the patient in the special capillary tube R, whose funnel-shaped end is placed against the free end of tube B, and is held there by means of clip H. The blood is then immediately sucked to mark 0. Now both blood and water stand at the same level. The stopcock is now opened, thus allowing both fluids to come under the influence of the bulb. Blood and water are then sucked up until the blood reaches the mark 1. The level at which the water stands indicates the viscosity of that specimen of blood.

It is only after much practice that accurate results can be obtained, and great care is required to prevent coagulation of the blood in the tube.

**THE MESENCEPHALIC FIFTH ROOT, THE DORSAL
VAGO - GLOSSO - PHARYNGEAL NUCLEUS, AND
THE QUESTION OF AN ENDO-NEURAL AFFERENT
GANGLIONIC SYSTEM.**

By LEONARD J. KIDD, M.D.

PART I.

The Mesencephalic Fifth Root.

THE recent very fine comparative study of this bundle by J. B. Johnston (1a) throws quite a fresh light on this ill-understood structure, and on some others also, in my opinion. Since it is possible to show that these have been erroneously interpreted by all observers hitherto, it seemed desirable to attempt to show their nature and the experimental methods by which this can be proved. In attempting this I should like to say in advance that my hypothesis is the direct outcome of this most inspiring paper of Johnston's, and seems to me to be a logical amplification thereof.

Briefly stated, Johnston's teaching is that the cells of the tectum mesencephali and locus cœruleus, from which the fibres of the mesencephalic fifth bundle originate, belong to the same category as the dorsal or giant cells of the spinal cord of fishes and amphibians, the cells of Rohon, studied by van Gehuchten in 1895 and 1897 and by himself (1b) in 1900, and are equivalent to peripheral ganglion cells. He thinks it probable that they have been derived from the neural crest during development, having been enclosed in the neural tube, as are the giant ganglion cells of the cord. He points out that (1c) a large part of the ganglion cells of the dorsal sensory nerves in amphioxus lie within the central nerve cord.

He finds that in all the vertebrates studied by him—fishes, amphibians, reptiles, mammals, and embryonic and foetal human brains—the bundle passes out by the sensory root; he finds, however, as others have done, that it gives collaterals to the motor fifth nucleus.

I must omit reference to many points of great interest to the comparative neurologist that his study has brought out;

but a few references to the character of the cells in the tectum and locus cœruleus must be quoted here from his paper. Thus: "Kölliker found the large cells of origin of the bundle to be multipolar, Golgi unipolar. Van Gehuchten figures two cells with their fibres in the young trout: one is bipolar, the other unipolar. Cajal figures unipolar cells in the adult mouse, although in embryos they may have several small dendrites." Johnston finds that "at least some of the cells have more than one process"; he adds that "it is possible that not all the cells are alike, that some are unipolar (Cajal) and others multipolar (Kölliker, Held), and still others bipolar with differentiated dendrite and neurite (Merkel and Krause). It is certainly true that in the toad both multipolar and bipolar cells exist, and that in both forms a typical slender axon can be distinguished from the thick process (and from the small dendrites of the multipolar cells)." He makes the profoundly important remark that "in every case in which a true axon was found the thick process entered the descending bundle and the axon penetrated the substance of the tectum itself." He figures in the rabbit an occasional bipolar cell whose slender axon takes an ascending direction.

After he has shown how the change of opinion from the original one of Maynert—the sensory root exit—to the newer one of Kölliker, van Gehuchten, Cajal, and others came about, he adds an important passage that has a direct bearing on a point which I will bring out at the end of this part of my Paper. Thus he finds that "in the mole, cat, and human embryo of 15.5 mm. there are strong indications that when the bulk of the bundle joins the sensory root a few fibres continue on caudad to the level of the vestibular nerve." Wallenberg (1904) saw fibres of this bundle in the pigeon and the duck continue caudad to the level of the "Cochlearis-Eckernes," and he mentions that Probst has seen such a caudal continuation of the bundle in mammals. These caudally directed fibres probably arise from the cells of the locus cœruleus, as in the caudal part of the locus cœruleus in the rat a considerable part of the large cells send their larger processes caudad away from the trigeminal bundle." In conclusion Johnston suggests degeneration experiments, and also in another series of animals avulsion of peripheral branches of the trigeminus with subsequent study of their cells

of origin. He offers the opinion that the fibres of the mesencephalic fifth bundle are presumably distributed to skin or to muscle sense organs.

Experimental Evidence.

1. Bregmann, 1892, found that section of the motor branch of the trigeminus caused degeneration of the motor root and the mesencephalic root. Johnston (1a) points out that this is much the strongest evidence thus far brought forward in favour of the prevailing modern view that the bundle is motor, but he adds that "the weak point in the argument is that the motor rami contain sensory fibres, and hence the peripheral operation is inconclusive. The mesencephalic root may supply sensory fibres to the mixed rami."

2. Ferrier and Turner (2), 1893, found that, in an experiment in which they divided the motor fifth root in its course through the pons, there resulted atrophy of the fibres of the descending fifth root and of the cells from which they spring. They also found that, in an experiment on the superior cerebellar peduncle, in which they divided the mesencephalic fifth bundle as it lies under cover of this structure, degeneration of some of the fibres of the issuing root followed, the motor nucleus being itself intact; and, further, that atrophic paralysis ensued in the masticatory muscles.

3. Aldren Turner (3), 1894, also found in an eight months human foetus that the passage of the medullated fibres of the mesencephalic fifth bundle could be clearly traced into the motor division of the nerve.

4. Ferrier, 1894, writes¹ that after division of the mesencephalic fifth bundle he found "no loss of sensation in the cornea nor elsewhere, nor any trophic disturbance in the eyeball during the many weeks the animal survived." [But it is important to remember here that in 1894 all of us ignored the clinical testing of deep sensibility, firm pressure on and squeezing of muscles, tendons, fasciæ, periosteum, etc. We do not know, then, what happened to the deep sensibilities in Ferrier's animal.—L. J. K.] Ferrier goes on to remark that "after section of the bundle, as well as after section of the motor root within

¹ *Brain*, Vol. xvii., 1894, p. 21.

the pons, there followed atrophy of the fibres of this bundle and of the crescentic layer of cells that surrounds the grey matter of the Sylvian aqueduct. This atrophy was, however, not a degenerative one but a simple atrophy, similar to that which occurs, as has been shown by Bregmann (*Obersteiner's Arbeiten*, 1892), Darkschewitsch (*Neurol. Centralbl.*, 1893), etc., in the central end of a motor root after division of its trunk."

5. Aldren Turner (3), 1894, refers to Merkel's view (1874) that the bundle is trophic in function as based on very insufficient grounds, and as distinctly negatived by Eckhard's experiments (1876). He points out also that in the well-known case of bulbar paralysis which Tooth and he studied¹ "there was during life palsy of the masticatory muscles; that on autopsy the motor fifth nucleus was almost completely degenerated, but the fibres of the mesencephalic fifth bundle and the cells from which they spring were normal, and that this precludes the possibility of a motor supply by this root to the muscles of mastication, at any rate in man."

6. Boyce (4), 1894, performed hemisection of the mesencephalon in the quadrigeminal region in cats; the animals lived from ten days to three months after the operation. He invariably found descending degeneration of the mesencephalic fifth bundle, always homolateral, by the Marchi method.

7. Wallenberg (5), 1904, found descending degeneration, by the Marchi method, of the bundle in birds after lesion in the tectum mesencephali. Johnston (1a) mentions that Wallenberg describes a few isolated fibres as passing from the bundle into the median nucleus of the cerebellum, most of the fibres passing out in the motor fifth root, and some fibres passing caudally to the level of the vestibular nerve to end in the reticular formation near the motor cells.

So far as I know, this summary completes all the experimental work that has been done on the bundle. It appears, therefore, that it is compatible with one, and only one, conclusion, viz., that the bundle contains descending fibres only. So far as I know, no experimentalist has ever found ascending degeneration in the bundle after Gasserianectomy or the Spiller-Frazier operation of section of the afferent fifth root, a result that would inevitably follow if any of the fibres of the bundle

¹ *Brain*, Vol. xiv., 1891, p. 473.

had their origin in the cells of the Gasserian ganglion. If my surmise be right, then clearly, if the bundle be afferent, it could be so only on Johnston's hypothesis that the cells of the tectum and locus cœruleus from which it arises are equivalent to dorsal root ganglion cells. One would therefore expect that after section the bundle would regenerate. No one seems to have studied this point hitherto. Certainly this should now be done. I will point out later the importance of this matter.

There is one consideration that is strongly in favour of the sensory nature of the bundle, viz., that the cells of the tectum mesencephali and locus cœruleus are known to be developed in the alar lamina of His—the dorsal zone of the brain—and we know of no instance in any vertebrate of a structure derived from the dorsal zone of the embryonic brain or spinal cord which supplies motor nerve fibres. The one thing we now need is exact information as to the peripheral distribution of the bundle, and it is hardly likely we shall have to wait long for this.

Clinico-Pathological Evidence.

1. The well-known case of facial hemi-atrophy studied by Mendel (6), in 1888, has been appealed to in support of Merkel's view that the mesencephalic fifth bundle is trophic in function. It is differently interpreted by Johnston (1a). The case was one of a woman who, twenty-five years before her death, had suffered from interstitial neuritis of the left fifth nerve. On autopsy it was found that the maxillary division was much more affected than any other part of the nerve. Johnston points out that this division is wholly sensory: his interpretation of Mendel's findings is that "the destruction of nerve fibres in the peripheral rami had resulted in retrograde degeneration of part of the fibres of the mesencephalic fifth bundle, and atrophy of their cells of origin. The Gasserian ganglion appeared normal, so, too, the motor nucleus. Either there had been no degeneration in either of these, or the atrophy of certain cells had been so complete in the course of twenty-five years that there were no results apparent to Mendel. The obvious conclusion is that the bundle is sensory."

2. Homén recorded (7), in 1890, another case of this rather rare disease; it was one in which an endothelioma of the dura

mater had pressed upon and flattened the left Gasserian ganglion and its branches. The patient had severe left facial neuralgia with anæsthesia; left facial hemi-atrophy ensued. Autopsy showed that the ganglion was not itself involved in the growth; microscopical examination showed a far advanced degenerative atrophy of all the peripheral fifth branches, and changes were also found in the roots of the fifth nerve.

This disease is rare in its complete form, so that we cannot truly say that it depends on a lesion of the mesencephalic fifth bundle, therefore caution is needed lest we build too much on this uncertain foundation.

3. By far the most valuable case published hitherto is the instructive and admirably studied and described case of Bruce (8), 1898. It was one "in which a tumour, after destroying the fifth nerve, had completely involved the glosso-pharyngeal nerve within the jugular foramen, but had spared the vagus nerve." Examination by the Marchi method. The passage dealing with the fifth nerve is as follows:—"The examination of the degenerations which followed the destruction of the fifth nerve showed that (1) the superior root was intact. Therefore we may assume that this root is efferent and not sensory. This is in harmony with the recent experiment of Ferrier and Turner; (2) the motor root was intact; (3) no degenerated fibres were traceable into the locus cœruleus of the same or opposite side; (4) the sensory root was entirely uncrossed," etc., etc. Bruce draws an "analogy between the nuclei of origin and those of the vago-glosso-pharyngeal nerve," but he is careful to point out that "the cells of the mesencephalic fifth bundle are not of the same character as those of the dorsal nucleus of the vago-glosso-pharyngeal nerve; but in other respects the resemblance is very close." Personally, I think he arrived at an important truth when he drew this parallel. His conclusion that the bundle is efferent was inevitable, because in 1898 everyone believed that all the sensory fibres in the fifth root rose in cells of the Gasserian ganglion. His case proves beyond all doubt that in man the bundle is composed wholly of descending fibres.

4. There is some clinical evidence that the mylo-hyoid branch of the mandibular nerve conveys afferent impulses from the mylo-hyoid and anterior digastric muscles. Thus, Ivy and

Johnson(9) mention (without reference) that Cryer (9b)¹ published three cases of "pain on the inner surface of the lower jaw and the floor of the mouth, which was not relieved by section below the point at which the mylo-hyoid branch is given off. A second operation, however, above the point of junction of this branch with the inferior dental nerve was followed by complete relief. This result is evidence that the mylo-hyoid branch, which supplies motor fibres to the mylo-hyoid and anterior digastric muscles, also conveys sensory impulses from these muscles, which from some irritation had given rise to pain." Ivy and Johnson mention (9a) that, in the case of Spiller's, studied by them, of complete destruction of the fifth nerve roots and Gasserian ganglion, in which during life pressure-sensibility was preserved in the trigeminal area, they were unfortunately unable, owing to the stuporose condition of the patient, to test pressure-sensibility over the temporal muscle. They add that its loss would have been proof that the motor fifth conveys this form of sensibility to the muscles of mastication.

Does the clinical study of cases of Gasserianectomy or the Spiller-Frazier operation of section of the afferent fifth root throw any light on the question of the function of the mesencephalic fifth bundle? Clearly, if section of this presumably sensory bundle should be found to be followed some months later by regeneration of its fibres, we should expect to find that in every case of completely successful section in man there would be immediate abolition of the special form or forms of sensibility subserved by the bundle in its special area or areas of distribution, and some months later a return of function.

On the question of cutaneous sensibility the evidence is practically unanimous that it is always permanently abolished; but it must be confessed that evidence is still sadly lacking on the question of the permanent condition of deep sensibility affecting the muscles innervated by the motor fifth root. Thus, I do not know of a single recorded case in which it is stated that the masseter or temporal or mylo-hyoid muscle was specially tested after fifth root section for the presence or absence of pain on squeezing or on deep firm pressure. One can easily squeeze the

¹ I find that the "Index Medicus" contains numerous references to papers by a writer of this name in the "Dental Cosmos" of Philadelphia—a journal inaccessible to me.

masseter and produce a much severer pain than is felt by merely squeezing powerfully the overlying skin. So also the temporal muscle can be well tested, and even the mylo-hyoid fairly well by upward pressure by the thumb. Of course, if the experimental physiologist should find that the mesencephalic fifth bundle does not regenerate after section, we should expect to find total and permanent loss of all forms of sensibility in the trigeminal area in man, *i.e.* of all those which depend on fibres that pass through the Gasserian ganglion, or (possibly) through the motor root of the fifth, which is usually divided in the operation.

Before I conclude this part of my paper I offer a suggestion, for which I am, so far as I know, wholly responsible—a suggestion that I feel certain will soon be proved experimentally to be correct. It is this:—Is it possible that the ganglionic origin of the muscle-afferent nerve fibres, which are known to exist high up in the trunks of the third, fourth, and sixth cranial nerves, are in some of the cells of the tectum mesencephali and locus cœruleus? It must be remembered that we do not know whether these cell groups send all their peripheral processes into the mesencephalic bundle. If it were found that avulsion or section of the bundle were followed by retrograde changes in only some of these cells my hypothesis would be strengthened; if, however, all the cells were affected, it would be presumably erroneous. This is one of the first experiments that now need performance.

Further, since it is known that the third and fourth nerves contain both direct and crossed fibres and the sixth direct fibres only, it would be necessary to examine microscopically the cells of the Sylvian grey matter on both sides of the raphé, but those of the locus cœruleus on the homolateral side alone. No one seems to have pointed out that if a muscle receive both crossed and direct efferent nerve fibres it must also receive both crossed and direct afferent fibres.

On the question of afferent nerve fibres to the eye muscles, it is only necessary to say that in 1897 Sherrington (10*a*) proved their presence in the third and fourth nerves, and, further, by the nature of his operative procedure, showed that they exist high up in the nerves, centrad of the cavernous sinus, and pass down to the musculo-tendinous endings, which are quite separate from the motor end plates of their muscles. In 1898 (10*b*) he proved the same thing for the sixth nerve; and he further proved

that (1) the fibres do not come from the Gasserian ganglion ; and (2) by an ingeniously-devised experiment in man, he showed that the tonus of the extrinsic eye muscles is not dependent on the optic nerve. He has recently, with Miss Tozer (11), published a further and more extended series of experiments and several fresh combinations of experiments. They confirm his previous work, and find that "section of third, fourth, and sixth nerves at their origin not only causes disappearance of motor-plate endings from their muscles, but also of the sensorial nerve-endings of the muscles and tendons and their afferent nerve fibres." They refer to several other points of interest, and hope to publish soon some further observations on these matters and also on the question of the levator palpebræ superioris muscle. It is to be noted that they make no reference to the recent experimental work of Harrison (12), who, working on dogs, failed to confirm Sherrington's findings on the third nerve, but confirmed his work on the fifth nerve. Harrison hoped to do further experimental work on the subject : so far as I know he has not yet published it, however. Anyone who has followed this matter carefully, and has also asked himself where the ganglionic origin of the eye muscle afferents can possibly be, will agree with me now, I think, that we must look to the cells of the Sylvian grey matter and locus cœruleus : the problem is otherwise virtually insoluble, because we may not invoke the Gasserian ganglion. My hypothesis is further strengthened by the following facts :—

(1) The longitudinal extent of the cells of the tectum and locus cœruleus agrees exactly with the distribution of the motor nuclei of the third, fourth, and sixth nerves, viz., from the anterior end of the mesencephalon to the level of the vestibular nerve. It is easy to see that fibres could pass from the cells of this region into the three nerve trunks just below their nuclei of origin and yet have escaped detection hitherto ; for we must remember that no one has ever yet looked for the ganglionic origin of the eye-muscle afferents in the cell groups mentioned above, and it is our common experience that those who do not look usually do not find.

(2) The cells of the tectum and the locus cœruleus are large : we know, by the work of Gaskell, Edgeworth, Wakelin, Barrett and others, that the third, fourth, and sixth nerve trunks contain very large fibres : we know, too, thanks to the work of Sherrington in

1894, that afferent muscle nerve fibres are large, though not quite so large as the largest efferent fibres in any given mixed nerve trunk.

Further, it seems to be practically certain that large nerve fibres rise always in large nerve cells. The suggestion, then, is a reasonable one, that the large eye-muscle afferents rise in the large cells of the tectum mesencephali and the locus cœruleus.

In conclusion, I should like to express the earnest hope that some physiologist may soon tackle this problem and throw a much-needed light on this question of the ganglionic origin of the eye-muscle afferents. I need hardly add that the neuropathologist may also do something to lighten our darkness.

(To be concluded.)

Abstracts

ANATOMY.

THE EVOLUTION OF THE CEREBRAL CORTEX. J. B. JOHNSTON, (522) *Anat. Record*, Vol. 4, p. 4, April 1910.

THE paper is itself an abstract of data which will appear in several succeeding papers. The purpose of the author is to discover the areas in the brains of lower vertebrates from which the general cortex and the hippocampal formation respectively take their origin, and to trace their phylogenetic history together with that of the pallial commissures. The primordium of each of the two main divisions of the cerebral cortex is recognised in all classes of vertebrates. These primordia are not evaginated into the lateral lobes or hemispheres in cyclostomes or in early embryos, but are gradually carried out by the increasing evagination, both in the phylogeny and the ontogeny. The equivalents of the commissura hippocampi and corpus callosum are present in probably all classes of vertebrates. They are both situated above the neuroporic recess, in the lamina supraneuroporica, in cyclostomes, selachians, reptiles and mammals, and this is believed to be their typical position. Data are given by which the hippocampal or visceral cortex and the general or somatic cortex are defined.

AUTHOR'S ABSTRACT.

THE ORIGIN AND COURSE OF TÜROK'S BUNDLE. (Über (523) *Ursprung und Verlauf des Türckschen Bündels.*) KATTWINKEL und NEUMAYER, *D. Ztschr. f. Nervenheilk.*, Bd. 39, 1910, S. 183.

THE writers examined a brain in which, in addition to a lesion of the left cerebral peduncle, there was also an area of softening in the right hemisphere, implicating the posterior half of the supra-marginal gyrus, the first and second temporal gyri, part of the second parietal gyrus, and the whole of the angular gyrus. The softened area extended inwards to the ependyma of the lateral ventricle.

Türk's bundle is the term applied to a path whose fibres, according to Meynert and others, are traceable from the temporal and occipital cortex to the outer part of the pes pedunculi, and thence into the outer part of the "pyramide du bulbe." Meynert considered this tract to be sensory, maintaining that it does not degenerate after a cortical lesion.

Kattwinkel and Neumayer, on the other hand, contend that the path is a centrifugal one, arising mainly from the cortex of the temporal lobe. They trace its terminal fibres to the proximal end of the inferior olive, where they ultimately disappear.

PURVES STEWART.

EXPERIMENTAL OBSERVATIONS ON THE ORIGIN OF THE (524) FACIAL NERVE. (Experimentelle Untersuchungen über den Ursprung des Nervus facialis.) K. YAGITA, *Anat. Anzeig.*, Bd. 37, No. 7-8, 1910, S. 195.

THE aim of this paper is to decide (1) whether any fibres of the facial nerve cross in the pons; and (2) whether the fibres which innervate the orbicularis palpebrarum and frontalis muscles arise from a separate nucleus or not.

The material used included dogs and rabbits, in which the peripheral branches of the facial nerve were cut; but no pathological human brains were examined.

The author describes the sub-division of the facial nucleus into dorsal, ventral and intermediate cell-groups in man, and compares the condition with that found in dogs and rabbits. The degeneration which followed experimental section is detailed, and the results are compared with those of other writers. The localisation of the origin of the different parts of the nerve in one or other of the cell-groups excludes the possibility of a separate nucleus for the fibres which supply the muscles of the upper part of the face, and no trace of any intra-pontine crossing of the fibres of the facial nerve was discovered.

The paper is illustrated by a number of diagrams representing the sub-division and cell-groups of the facial nucleus in man, in dogs and in rabbits.

J. B. JOHNSTON.

THE USE OF METHYLENE BLUE IN NEUROLOGY. (*Die Anwendung des Methylenblaus in der Neurologie.*) MICHAÏLOW, *Zeit. f. wiss. Mikroskopie*, Bd. xxvii., S. 1, 1910.

MICHAÏLOW traces the development of Ehrlich's methylene blue method of staining nerve tissue. The following is the modification which he has been led finally to adopt:—One and a half to two hours after death the organ to be examined is thoroughly washed in Ringer-Locke's fluid (heated to 37° C.), and cut into pieces measuring from 10 by 5 mm. to 60 by 50 mm. These are then placed in a Koch's beaker, the bottom of which is covered with filter-paper soaked in warm Ringer-Locke's fluid. A $\frac{1}{2}$ per cent. methylene blue solution has previously been prepared by slowly adding Ehrlich's rectified methylene blue (Gruebler) to Ringer-Locke's solution heated to 60° C. Weaker solutions ($\frac{1}{3}$ per cent. to $\frac{1}{3\frac{1}{2}}$ per cent.) are made from this, and it is one of these which is poured over the pieces of tissue in the Koch's beaker, which is kept at a temperature of 37° C. At intervals of fifteen to twenty minutes this is repeated, until the observation of a control under the microscope shows that the nerve elements have been sufficiently coloured. The tissue is then kept for twenty-four hours in a large quantity of the following fixing solution, which at the time when the tissue is introduced must have a temperature of 37° C.:—

Ammonium molybdate	8.0 g.
Formalin (Schoerring)	0.5 c.c.
Distilled water	100.0 c.c.

The pieces are then washed in warm water, dehydrated in alcohol, passed through bergamot oil, and mounted in damar-xylol. With this method the nerve elements are coloured an intense blue, while the surrounding tissue remains entirely unstained.

JAMES W. DAWSON.

THE FORMATION OF THE AMMONIUM SILVER SALT SOLUTION IN BIELSCHOWSKY'S IMPREGNATION METHOD. (526) (*Über die Herstellung ammoniakalischen Silbersalzlösung bei der Imprägnationsmethode von Bielschowsky.*) SCHLEMMER, *Zeit. f. wiss. Mikroskopie*, Bd. xxvii. 1, S. 22.

THE author describes the procedure which he has adopted to avoid the difficulties met with in the use of Bielschowsky's silver im-

As the corrosive sublimate dissolves slowly, it is necessary to make up the solution a few days before it is required for use. Brains of adult rats are well fixed in three hours; they are then placed in 85 per cent. alcohol for one hour, and transferred into iodized 70 per cent. alcohol till the corrosive sublimate has been extracted from the tissues—one to three days. The brains may then be preserved in 80 per cent. alcohol, but it is recommended to embed as soon as possible.

With paraffin embedding considerable condensation or vacuolization of the cytoplasm takes place, but after embedding in celloidin-paraffin no shrinkage is evident anywhere. The author uses a modification of Bödecker's method of double embedding in celloidin and paraffin.

From 80 per cent. alcohol the brain is passed through 95 per cent. alcohol, absolute alcohol and ether-alcohol, remaining in each solution for twenty-four hours. It is then transferred to thin celloidin for two to three days, to chloroform for six hours, to benzole for one hour, to benzole and soft paraffin for eighteen hours at 35° C., to soft paraffin (melting point, 45° C.) for two hours, and to hard paraffin (melting point, 54° C.) for two hours, and is embedded in hard paraffin. The sections, cut at 5 μ thickness, are mounted on albumenized slides and stained with 1 per cent. solution of carbol-thionin.

JAMES W. DAWSON.

PHYSIOLOGY.

ON THE FUNCTIONS OF THE OPTIC THALAMUS AND THE (528) CORPUS STRIATUM. JAS. V. BLACHFORD, *Journ. of Ment. Sci.*, July 1910, p. 452.

WHEN trying to determine the functions of the basal ganglia, one is most likely to be successful by a careful study of their developmental and anatomical relations and the symptoms found in cases where they can be shown to be principally diseased.

Developmentally the optic thalami are connected with the cerebral hemispheres, and anatomically with the optic tracts and the temporal lobe, and so, no doubt, with the centre of hearing. Profound and rapid dementia appears to be the outstanding symptom in cases where post-mortem they are found to be the chief site of disease.

Connected as it is with sight and hearing, the optic thalamus may well be the centre which governs the association of these senses, and that of touch—which the author points out—is closely allied to sight. Moreover, through its representative cells in the cerebral cortex in which these associations are registered, an

appreciation of the quality of things is brought about which renders thought possible.

Such an association gives us the power of perception. Anything interfering with this power would bring about profound dementia, exactly what one sees in cases where the basal ganglia are diseased.

W. SCOTT WATSON.

REPRESENTATION OF SENSATION IN THE CORTEX, ETC.

(529) (Über die Repräsentation der Sensibilität in der Hirnrinde: Erörterung eines Falles von dauernder isolierter Sensibilitätsstörung cortikalen Ursprungs.) FRANK, D. *Ztschr. f. Nervenheilk.*, Bd. 39, 1910, S. 139.

THE patient was a man of 40, who nineteen years ago received a head injury from a blow with a heavy gascock. The skull was indented in the region of the right parietal eminence. The injured area of bone was removed. Some brain substance and blood-clot also came away. There was transitory weakness of the left hand and fingers. There remained persistent anæsthesia of the ulnar side of the left forearm, including three ulnar fingers, the anæsthesia being most intense in the fingers. There was also permanent impairment of sensation in the left upper quadrant of the trunk and side of neck, extending down the outer side of the left upper arm, also an area of diminished cutaneous sensibility on the front of the thigh. There was loss of joint sense in the three ulnar fingers, and astereognosis with objects felt by these three anæsthetic fingers. The damaged area of the cortex, by measurement of the existing scar, was shown to correspond to the right supra-marginal and post-central gyri.

PURVES STEWART.

RECEPTORS AND AFFERENTS OF THE THIRD, FOURTH,

(530) **AND SIXTH CRANIAL NERVES.** TOZER and SHERRINGTON, *Proc. Roy. Soc.*, Vol. B. 82, No. B. 557, 1910, p. 450.

THE authors adduce evidence in support of the view that the third, fourth, and sixth cranial nerves contain afferent as well as efferent fibres, the afferents belonging to the receptive (sensorial) endings with which all the extrinsic eye muscles are richly provided.

The experiments have been performed upon rabbits, cats, and monkeys, and for examination of nerve endings use has been made of Ehrlich's *intra-vitam* methylene blue method, and of osmic acid for staining and fixation prior to weak dissociation and teasing.

After section of the nerves at their origin, not only do the

motor endings disappear from the extrinsic eye muscles supplied, but also the musculo-tendinous and intramuscular receptive (sensorial) nerve endings, with their afferent nerve fibres.

The fifth nerve may supply a few fibres to the orbital muscles. After section of the first division of the fifth nerve just distal to the Gasserian ganglion in a monkey, the symptoms observed were anæsthesia of the cornea, upper eyelid, and forehead. The pupil of the operated side was the smaller. Degenerated fibres were found in the branches from the third nerve to the inferior oblique and superior rectus. The fourth and sixth nerves also contained degenerated fibres.

A few myelinated fibres are found undegenerated in the extrinsic eye muscles after combined section of the third, fourth, and sixth nerves, and ophthalmic division of fifth. These appear to be derived from the ciliary and an accessory ganglion. The ciliary ganglion has been shown to be entirely an efferent relay station, the equivalent of a sympathetic ganglion.

Reflex movements of the ear, etc., may be obtained when the inferior oblique muscle after detachment is stretched between ivory-tipped forceps.

The degeneration of the third, fourth, and sixth cranial nerves which occurs in tabes becomes less anomalous in view of these nerves being afferent-efferent and not purely efferent.

W. A. JOLLY.

REPORT OF THE COMMITTEE ON COLLECTIVE INVESTIGATION (531) CONCERNING THE OCULAR MUSCLES. LUCIEN HOWE, HOWARD F. HANSELL, and T. B. SCHNEIDMANN, *Journ. of American Med. Assoc.*, July 30, 1910.

THE result obtained by this study of the anatomy and physiology of the ocular muscles can be summarised briefly as follows. We have:

First. Corroborative evidence concerning the check ligaments sufficient to warrant a definition of their extent.

Second. Corroborative evidence of the existence and extent of the secondary insertions of the ocular muscles. All will now probably agree as to their clinical importance.

Third. A few more exact dissections of the ciliary ganglion.

Passing next to physiology, we have:

Fourth. Corroborative evidence as to the power of accommodation with parallel visual axes.

Fifth. New curves of the effects of cocaine, showing the important fact that it has a cycloplegic action.

Sixth. A curve of the action of homatropin, one-fiftieth of a grain.

Seventh. Curves indicating that various strengths of eserine produce varying curves, showing its effect on the accommodation.

Eighth. Corroborative evidence that orthophoria for the far point exists only in a small majority of cases.

Ninth. There is a difference between minimum and maximal ducession, the former being quite constant, the latter not ordinarily constant.

Although these data are not numerous, they indicate that perhaps a little has been done to give us rather more exact definitions concerning one or two essential points. They also add a few corroborative facts as to some points about which we needed additional light.

E. M. LITHGOW.

**THE EXPERIMENTAL EVIDENCE FOR THE THEORY OF THE
(532) NEUROGENIC CO-ORDINATION OF THE HEART IMPULSE.** H. KRONECKER, *Brit. Med. Journ.*, 1910, ii. 185.

IN this short paper Professor Kronecker again recapitulates his own observations and those of his collaborators in support of the neurogenic theory of the heart's action. He concludes that "the auriculo-ventricular bundle is not necessary for co-ordination, or does not suffice."

W. T. RITCHIE.

**THE ELECTRICAL EXCITABILITY OF DEGENERATING
(533) CENTRAL NERVE PATHS.** (*Die elektrische Erregbarkeit degenerierender zentraler Nervenbahnen.*) OSCHEROWITSCH, *Zentrabl. f. Physiol.*, Nr. 9, 1910, S. 393.

DIFFERENCE of opinion exists with regard to the period, after severance from their cells, at which the fibres of the central nerve paths lose their excitability.

The method employed by the author in investigating the question is as follows:—The right motor area in the cortex of an anæsthetised dog is exposed, mapped out by stimulation, and completely extirpated. Several days afterwards the cranium is widely opened, the base of the brain exposed by a frontal section through both hemispheres, and the anterior part of the brain removed. The internal capsule, or the pes pedunculi, is stimulated on the two sides alternately and the movements of the limbs noted.

The result obtained is that in dogs five and seven days after complete removal of the motor cortical region the fibres of the pes pedunculi are still excitable by the faradic current, while after eight and nine days this excitability has disappeared.

No complete parallelism can be demonstrated between the histological appearance of degeneration by Marchi's method and the loss of excitability in central nerve paths.

W. A. JOLLY.

PATHOLOGY.

EXPERIMENTAL POLIOMYELITIS IN MONKEYS. Eighth Note.
(534) S. FLEXNER and P. A. LEWIS, *Journ. Am. Med. Ass.*, Aug. 20, 1910, p. 662.

ACTIVE immunity to poliomyelitis is acquired on recovering from an attack of the disease, but it can be achieved also by injecting the virus subcutaneously, though not with constant success, as some animals so treated do not acquire a strong immunity and others develop paralysis as a result. The serum of animals (and of human beings) who have recovered from an attack, and also of those who have been actively immunised, possesses marked neutralising power for the virus *in vitro* and also *in vivo*, if the quantity of virus injected be not too large. Human serum derived from children who have passed through an attack, if injected into the subarachnoid space by lumbar puncture within twenty-four hours of the intracerebral inoculation of the virus, entirely prevents the development of paralysis in some animals and greatly delays it in others. A neutralized mixture of virus and immune serum gives no active immunization however, and little or no passive immunity is produced by the serum injections. It has been found that normal sheep serum possesses a definite though slight neutralizing power for the filtered virus, and that the injection of emulsions of the spinal cord and brain of recently paralysed monkeys into the sheep augments this power of neutralization.

J. H. HARVEY PIRIE.

CONTRIBUTION TO THE PATHOLOGICAL ANATOMY OF
(535) **PROGRESSIVE NEURITIC MUSCULAR ATROPHY.**
(Beitrag zur pathologischen Anatomie der progressiven neurotischen Muskelatrophie.) CASSIRER und MAAS, *D. Ztschr. f. Nervenheilk.*, Bd. 39, 1910, S. 321.

THE authors describe the pathological appearances in a case of muscular atrophy. The patient was a man of 42, in whom the symptoms appeared gradually some three years previously, with weakness of the legs and slight paræsthesia. The muscles of the toes and ankles were paralysed and atrophied. The knee-jerks and ankle-jerks were absent. Sensory changes were very slight. There was similar weakness in the hands, but of lesser degree. The weak muscles had diminution or loss to faradism, KCC being

= ACC. The sphincters were unaffected. As the disease progressed, the pupillary reflex to light disappeared. Three years later, at the age of forty-five, the patient died. In spite of the late onset and the absence of familial characters, the authors believe the case to be one of progressive neuritic muscular atrophy, rather than of hypertrophic interstitial neuritis.

On examination, the spinal cord was normal, whilst the peripheral motor nerves showed degenerative changes. The anterior and posterior roots were unaffected, and also the purely sensory peripheral nerves. The affected muscles were degenerated, with atrophy and fatty degeneration of their fibres. The intra-muscular nerve fibres were degenerated.

PURVES STEWART.

THE FIBRILLARY AND RETICULAR APPARATUS OF THE (536) NERVE CELL IN EXPERIMENTAL POISONING BY STRYCHNINE. (Gli apparati fibrillari e reticolari delle cellule nervose nell'avvelenamento sperimentale da strichnina.) COSTANTINI, *Riv. di patol. nerv. e ment.*, f. 8, p. 477, 1910.

THE author concludes (1) that by Bielschowski's and Cajal's methods the neuro-fibrillary apparatus of the cells of the anterior cornua shows profound alteration, while by Donaggio's method little change is seen; (2) by Bielschowski's method sometimes there is a condensation of the fibrils towards the centre of the cell, at others towards the periphery; (3) by Cajal's method the cell groundwork is more deeply yellow in the central parts of the cell, and the fibrils are less numerous, but swollen and tortuous; (4) by Donaggio's method sometimes the perinuclear space disappears and there are numerous endocellular vacuoles; (5) probably these contradictory results are explained by the presence of two systems, fibrillary and reticular; (6) satellite cells surround the nerve cells, but do not penetrate them; (7) there is nothing specific in the changes of the fibrillary and reticular systems, but in all probability they indicate a disturbance of cell nutrition.

DAVID ORR.

CLINICAL NEUROLOGY.

POST-TYPHOID MYOPATHY. (Contributo clinico allo studio delle (537) miopatie post-tifose.) G. SPADARO, *Riv. crit. di clin. med.*, 1910, pp. 145 and 161.

A MAN, aged 22, with no family or personal taint, developed an ordinary attack of typhoid fever in March 1907. In the third week of convalescence he had some muscular pain in the right

hand for a few days, and three weeks later definite paralysis developed, which, in spite of treatment, had remained the same ever since, *i.e.* for twenty-six months. The following muscles of the right hand were paralysed:—the *extensor carpi radialis longior* and *brevior*, the *interossei*, *lumbricales*, and all the muscles of the thenar eminence except the *opponens pollicis*. The absence of RD in spite of marked atrophy of the paralysed muscles, of fibrillary contractions, of sensory disturbance, and of vaso-motor changes excluded any affection of the central or peripheral nervous system, and pointed to a primary myopathy.

The myopathies of typhoid fever have been classified by Guillain under three heads: (1) Acute myositis described by Rokitsansky, Zenrer, Jaccoud, and Hayem, affecting chiefly the *recti abdominis*, *psoas*, pectoral and leg muscles; (2) hypertrophic myopathy associated with lesions of the blood vessels (Babinski); (3) pseudo-hypertrophic myopathy, progressive and generalised, of which Guillain's own case is an example (*v. Review*, 1907, p. 563). A fourth group must now be created to include the present case, which differs from those of Class III. in being an atrophic, stationary, and segmentary myopathy. J. D. ROLLESTON.

RADICULITIS. LANGDON, *Journ. of Nerv. and Ment. Dis.*, Aug. (538) 1910, p. 488.

THE patient, a man of 33, complained of severe pain in the left side of the neck, and a progressive paresis of all four limbs, most of the left upper one. Acuity of sensation was slightly diminished over the left side of the thorax in front. Babinski's sign was present in both sides. By exclusion the diagnosis of gumma was arrived at, and the patient showed marked improvement under mercury treatment. The writer adds that "the nomenclature is simply of topographical significance and clinical convenience."

ERNEST JONES.

ON FAMILIAL OCCURRENCE OF DIPHTHERITIC PARALYSIS.

(539) (*Über familiäres Auftreten postdiphtherischer Lähmungen.*) C. KAYSER, Inaugural Dissertation, Strasburg, 1910.

THIS thesis deals with the four cases of diphtheritic paralysis already related by E. Meyer (*v. Review*, 1910, p. 173). The first child, a boy, aged 10 years, had a severe attack of diphtheria, treated with 1000 units of antitoxin, and followed by precocious paralysis of the palate, cycloplegia, loss of knee and ankle jerks, and bilateral peroneal palsy. The second, a boy, aged 9 years, suddenly developed left internal squint and diplopia, without any

previous history of sore throat. The third, a girl, aged 7 years, received no medical attention during the initial attack, and developed palatal palsy on the eighteenth day. The fourth, a girl, aged 12 years, showed ataxia without any previous history of sore throat.

The familial character of the paralysis is attributed to the fact that the children, who assisted their father in serving customers at a public-house, consumed $\frac{1}{2}$ - $\frac{3}{4}$ litre of beer daily.

J. D. ROLLESTON.

SPONTANEOUS FRACTURES IN TABES. (Contribution à l'étude (540) des fractures spontanées du tabes.) A. GUICHARD, *Thèses de Paris*, 1909-10, No. 330.

SPONTANEOUS fractures in tabes are relatively rare. About a hundred cases in all have been published. They are relatively more frequent in women. As a rule they are a symptom of the ataxic period, but sometimes they may be the first indication of a hitherto unsuspected tabes. They may precede by some months, or even years, the abolition of reflexes, ocular troubles, and spinal lymphocytosis. In the majority of cases they are associated with osteo-arthritis, and are situated in the immediate neighbourhood of the diseased joint. The anatomical lesions preceding the fracture are those of an ordinary rarefying osteitis. Entire absence of pain and enormous swelling, due to effusion of blood, are characteristic. Consolidation occurs in the great majority of cases. Owing to the claims for damages, especially by workmen, to which these fractures give rise their practical interest is considerable. The thesis contains the histories of sixteen cases, three of which are original.

J. D. ROLLESTON.

PAROXYSMAL ARTERIOSPASM WITH HYPERTENSION IN THE (541) GASTRIC CRISIS OF TABES. L. F. BAKER, *Amer. Journ. Med. Sci.*, May 1910.

A CASE is described in which the patient, a married woman of 49 years old, suffered from severe pain in the upper abdomen radiating into the back. The pain was accompanied by paroxysmal arteriospasm with great elevation of the maximal arterial pressure. That the hypertension depended on the arteriospasm was evident from the effect of amyl nitrite, which reduced the maximal pressure promptly to 90 Hg., though as soon as the effects of the nitrite had worn off, the hypertension reappeared. It was only after the pressure returned to normal and remained on the normal level that the symptoms disappeared.

Severe abdominal pain with paroxysmal hypertension occurs in at least three conditions: (1) gastric crises of tabes; (2) lead colic; (3) the angina abdominis of arteriosclerosis.

Should the crises continue in this patient, the advisability of cutting intradurally the seventh, eighth, and ninth dorsal nerve roots on both sides of the body will be considered.

D. K. HENDERSON.

A CASE OF ACQUIRED SYPHILIS IN AN HEREDITARY LUETIC.

(542) O. L. SUGGETT, *N.Y. Med. Journ.*, April 10, 1910.

THE patient had unmistakable evidences of hereditary syphilis, *e.g.* typical sabre-blade tibiae, enlargement of epiphyseal ends of each humerus, scaphoid scapulæ, serrated teeth, stunted growth, and head disproportionately large. The acquired condition was exceedingly severe and virulent. A brother, who also showed decided evidence of hereditary taint, also acquired the disease.

D. K. HENDERSON.

THE SERUM DIAGNOSIS OF SYPHILIS. HOMER F. SWIFT, *N.Y.*

(543) *Med. Journ.*, March 26, 1910.

THIS paper deals with (1) the principles upon which the method is based; (2) the theories of the nature and mechanism of the reaction; (3) its various modifications.

D. K. HENDERSON.

THE PRECIPITATION REACTION OF PORGES IN SYPHILIS

(544) **AND TABES.** (*La réaction de précipitation de Porges, dans la syphilis et la tabes.*) LE LOURD et PAGNIEZ, *Gaz. des hôp.*, No. 82, 1910, p. 1170.

THE authors review the published results of the reaction as applied to the blood serum of patients suffering from syphilis and tabes. Together with their own statistics, the collected cases show that out of 535 cases of syphilis or tabes, 362 gave a positive reaction (67.6 per cent.). In 484 cases of non-syphilitic affections, a positive reaction was given in 45 (9.2 per cent.). The writers reaffirm their previous conclusions, *viz.*, that the reaction, while not being strictly specific, gives so high a percentage of positive findings in syphilitic and tabetic cases that it is of practical value. The Wassermann reaction is doubtless more exact, but it is more complex and is open to technical error unless carried out by skilled workers.

F. ESMOND REYNOLDS.

TABES IMPROVED BY ANTI-DIPHTHERITIC SERUM. (*Tabes (545) dorsal mejorada con el suero antidiftérico.*) R. DEL VALLE y JOVE, *Archivos Españoles de Neurologia, Psiquiatria y Fisioterapia*, July 1910, p. 217.

AN unmarried man, aged 34, a carpenter by trade, was admitted to hospital with typical tabes of eleven months' duration in January 1910. He had suffered from malaria followed by dysentery at the age of sixteen, but denied alcoholism and syphilis or other venereal diseases. Wassermann's reaction was negative. Stimulated by the work of Robertson and M'Crae, and by the success obtained in a case similarly treated by his father, the writer determined to adopt treatment by diphtheria antitoxin. Between February 2 and April 21 fourteen injections were given, the first two subcutaneously, and the rest intramuscularly. All the injections caused severe pain both in the upper and in the lower extremities, which was relieved by the administration of methylene blue pills or santonin powders. The impairment of sensation and the ataxia showed considerable improvement, so that he was able to walk without support, having previously required the help of two sticks. The treatment had little or no effect upon the other symptoms. Better results would probably have been obtained had the treatment been started earlier. The writer concludes that the results of this treatment are sufficiently encouraging to justify the employment of diphtheria antitoxin in tabes, especially if, as in the present case, it be associated with motor re-education.

J. D. ROLLESTON.

THE OPERATIVE TREATMENT OF GASTRIC CRISES IN TABES. (546) (*Die operative Behandlung der gastrischen Krisen bei Tabes.*) GÖTZL, *Centralbl. f. Grenzgeb.*, No. 10, 1910, S. 369.

THE intradural division of the posterior nerve roots for the gastric crises of tabes was first proposed by Foerster. The sympathetic fibres to the stomach run in the 7th-9th dorsal roots, and in gastric crises there is usually hyperæsthesia of the skin corresponding to these nerves, and increase of the epigastric reflex. Küttner first operated in this condition, dividing the posterior roots of the 7th-9th dorsal nerves intradurally and also the 10th pair, as there was some intestinal colic as well. The wound healed quickly, pain and vomiting ceased, and the patient gained greatly in weight. In other two cases described by Götzl the 7th-9th roots were divided, with relief of the gastric symptoms, although there still remained some intestinal pain. Further experience will indicate more clearly at what stage in the disease the operation should be done and what its extent should be.

JAMES M. GRAHAM.

**EXTENDED WASSERMANN METHOD FOR THE DIFFERENTIAL
(547) DIAGNOSIS OF CEREBRO-SPINAL LUES AND MULTIPLE
SCLEROSIS. (Erweiterer Wassermannsche Methode zur Differ-
ential-diagnose zwischen Lues cerebrospinalis und multipler
sklerose.)** HAUPTMANN und HÖSSLER, *Münch. med. Wchnschr.*,
No. 30, 1910, S. 1581.

THE authors review in some detail the usefulness of the methods generally employed in differentiating between cerebro-spinal lues and multiple sclerosis, viz., the original Wassermann reaction as applied to the blood-serum and to the cerebro-spinal fluid, the increase in the cytological elements of the cerebro-spinal fluid, and the increase of the albumen-contents of the cerebro-spinal fluid. They point out where each of these methods fails in helping the differential diagnosis. In their research, they compared the findings as given by the original Wassermann reaction and by Zeissler's modification—the so-called extended Wassermann reaction. Their investigation was carried out on—

- (1) Twelve patients who had no disease of the central nervous system.
- (2) Six cases of multiple sclerosis.
- (3) Fourteen cases of cerebro-spinal lues.
- (4) Eleven cases of tabes dorsalis.
- (5) Twenty cases of cerebro-spinal disease other than those already included in the above.

They confirm the previous findings of other authors that, in the majority of cases, a positive reaction is not given by the original Wassermann method applied to the cerebro-spinal fluids of patients suffering from the parasymphilitic affections included in the above groups. Moreover, a positive reaction as obtained by the original Wassermann method merely indicates a previous syphilitic infection, and does not in the least indicate the specific character of the disease affecting the central nervous system.

In none of the cases included in Groups (1) and (2) was a positive finding given by the Zeissler modification, in spite of the history of syphilitic infection in two of the cases included in Group (1). In Group (3), the arteritic form of the disease (three cases) gave negative results; the other cases were positive with the larger quantities of the cerebro-spinal fluid. In Group (4), a large percentage of positive reactions was obtained with the larger quantities of the cerebro-spinal fluids. The writers also state that the modified method is useful in differentiating between true tabes and pseudo-tabes alcoholica. In Group (5), none of the cases gave a positive finding by the method.

The general conclusions of the research are—

- (1) The negative findings frequently given by the original

Wassermann method, as applied to the cerebro-spinal fluids of patients suffering from the diseases of the central nervous system due to syphilis, is due to the fact that the amount of fluid used in carrying out the original reaction contains too few "binding bodies." But if several times this amount of fluid is used, the findings are, in the majority of the cases, positive without the fluid of itself fixing such an amount of complement as to lead the investigator to suppose that the reaction was positive, when in reality this was not the case.

(2) When the clinical findings are such that a differential diagnosis between cerebro-spinal lues and multiple sclerosis cannot with certainty be made, and when the other methods have failed to give a definite diagnosis, this can be made by the extended Wassermann reaction.

F. ESMOND REYNOLDS.

FRIEDREICH'S ATAXIA. W. G. SPILLER, *Journ. of Nerv. and Ment.* (548) *Dis.*, July 1910, p. 411.

A VERY clear and valuable account of the pathological examination in a case of Friedreich's ataxia is given, together with a short clinical description. Findings not previously observed were: (1) Fatty degeneration of the muscle fibres; (2) degeneration of the sensory roots of the trigeminal nerves; and (3) the presence of numerous naked axis cylinders, as shown by the Bielchowsky stain, in the greatly degenerated columns of Goll. Noteworthy was an atrophy of the leg muscles, with a pseudo-hypertrophy of the arm muscles. A clinical description of a second case is given, in which pronounced atrophy of peripheral muscles, especially in the hand, was present. A detailed account of the literature is added concerning the occurrence and nature of muscular atrophy in the disease, the relation of this to other hereditary affections, and the lesions determining the ataxia and sensory symptoms. Unfortunately Spiller does not clearly formulate his own conclusions on these points.

ERNEST JONES.

EXPERIMENTAL EPIDEMIC POLIOMYELITIS AND ITS RELATION TO HUMAN BEINGS. SIMON FLEXNER, *Archives of Pediatrics*, July 1910, p. 481.

In this communication the writer gives a general view of the essential new features we have learned regarding poliomyelitis; he also takes an optimistic view as regards future therapeutic progress. The following are the chief points on which he lays stress:—The disease in monkeys is comparable in all respects with that in human beings, only, as a rule, it is more severe. The

virus is a living filterable one, and so far it has not been certainly possible to cultivate it outside the body. The pathological lesions are the same, and the varieties of the spontaneous disease are reproduced in the experimental. The incubation period averages about eight days, but may be as short as three, or it may be over a month. The most certain mode of transmission has been found to be intra-cerebral inoculation, but almost as sure is by way of the nasal mucosa. So long as that remains intact, inoculation does not lead to the production of the disease, but a very slight traumatism opens up the way and leads to infection *via* the olfactory nerves and the meninges. Other mucous surfaces do not behave in this way, and it is believed that the nasal mucosa is the most important channel of excretion for the virus, and very probably also of infection in epidemics. The importance of this is obvious, especially since it has been found that swabbing with peroxide of hydrogen will destroy the virus. The cerebro-spinal fluid shows an increase of protein content, and also of cells, some days before the onset of paralysis. This period only lasts a few days. The fluid then returns to its previous condition. An attack of the disease confers immunity, and the blood of animals (and children) who have recovered is capable of neutralising the virus outside the body. Experiments are in progress to see whether it is possible to neutralise the virus after inoculation into the nervous system.

J. H. HARVEY PIRIE.

**REMARKS ON THE ÆTIOLOGY AND PATHOLOGY OF
(550) INFANTILE PARALYSIS.** F. HERNAMAN-JOHNSTON, *Practitioner*, Aug. 1910, p. 231.

THIS short paper, if written two years ago, might have been regarded as a fair compilation regarding the points named in the title, but, since it takes no cognisance of recent discoveries, cannot now be considered of much value.

J. H. HARVEY PIRIE.

**THE OCCURRENCE OF INFANTILE PARALYSIS IN MASSA-
(551) CHUSETTS IN 1909.** R. W. LOVETT, *Boston M. and S. Journ.*, July 14, 1910, p. 37.

THIS paper gives, firstly, a condensed report of the recent progress of our knowledge with regard to the disease, and, secondly, of the data obtained by the State Board of Health with regard to the disease in Massachusetts in 1909. Over 900 cases were reported, and some 150 of these have been fully investigated. A very large number of data have been accumulated, but at present it is impossible to say which are relevant and important and which are not.

J. H. HARVEY PIRIE.

SARCOMATOSIS OF THE CERVICAL DURA SUGGESTING
 (552) **HYPERTROPHIC CERVICAL PACHYMENINGITIS.** DER-
 CUM, *Journ. of Nerv. and Ment. Dis.*, Aug. 1910, p. 481.

THE nature of this short communication is indicated in the title. The diagnosis was made after death. The affection had arisen in a sarcoma of the seventh rib.
 ERNEST JONES.

THE INDICATIONS FOR LUMBAR AND CEREBRAL PUNCTURE.
 (553) (*Beiträge zur Frage des Berechtigung des spinalen und cerebralen Punktion.*) APELT, *Berlin klin. Woch.*, 33, 1910, S. 1540.

IN extradural spinal tumours, Apelt has found a very marked increase of globulin in the cerebro-spinal fluid, although there was no increase in the cells. The diagnosis was confirmed in two cases by operation and in one case at the sectio. Nonne has described two cases with similar characters.

In cases of meningitis, where the fluid obtained by lumbar puncture is clear, an increase in globulin indicates tuberculous meningitis; in seven cases of meningitis serosa this test was negative. Cerebral puncture after trephining is only useful for diagnosis after all the usual methods have failed. A case of Jacksonian epilepsy was examined in this way, and the contents of a cyst tapped at a depth of $3\frac{1}{2}$ cm. The symptoms were permanently cured by a second puncture a fortnight later.

JAMES M. GRAHAM.

A STUDY OF THE CEREBRO-SPINAL FLUID. (*Studien über*
 (554) *den Liquor cerebrospinalis.*) F. K. WALTER, *Monatsschr. f. Psychiat. u. Neurol.*, Bd. 28, Ergänzungsheft, 1910, S. 80.

IN this paper the author takes up, in a very complete and able manner, several points in connection with the cerebro-spinal fluid. After dealing with the anatomy of the cerebro-spinal subarachnoid space, he discusses the hydrostatic relationships existing in the space, illustrating the phenomena by schema and giving his results of experiments performed on the human subject post-mortem. The writer then deals with the movement of the cerebro-spinal fluid, quoting the opinions and observations of previous workers on this branch of the subject. He then considers the fluid from its cytological aspect and in regard to its albumen-contents, giving the result and analysis of his own investigations on certain cases. The paper concludes with a full bibliography of the subject.

F. ESMOND REYNOLDS.

**THE VALUE OF AN EXAMINATION OF THE CEREBRO-SPINAL
(555) FLUID IN GENERAL PRACTICE.** RUPERT COLLINS, *Practitioner*, Aug. 1910, p. 213.

THE author emphasises the value of the cytological examination of the cerebro-spinal fluid in cases of meningitis, cerebral abscess, cerebral tumour, subdural hæmorrhage, uræmia, and traumatic mental disturbance in regard to their diagnosis and differentiation. Especially may the information derived be of help in those cases in which the patient is unconscious when first seen. The writer points out how the cytological findings of the cerebro-spinal fluid, together with the information derived from a blood-count, differentiates the above conditions, and concludes by giving a collection of cases in which a diagnosis was made or confirmed by the data obtained from these two methods of investigation.

F. ESMOND REYNOLDS.

CEREBRO-SPINAL MENINGITIS. CHARLES BAGLEY, Junr., *N.Y.* (556) *Med. Journ.*, March 12 and 19, 1910.

THE purpose of this paper is, primarily, to show the excellent results in the treatment of cerebro-spinal meningitis by the anti-meningitis serum of Flexner.

Nine cases are reported. Of three cases in which the serum was not used, two died and one recovered; recovery occurred in the other six cases in which the serum was used. In employing this method as much cerebro-spinal fluid as possible should be withdrawn by lumbar puncture, and the full doses of from 30 to 45 cc. of the anti-serum should be injected. If the symptoms are severe and 30 cc. of fluid cannot be withdrawn, full doses of the serum should be injected, regardless of the amount withdrawn.

D. K. HENDERSON.

**CEREBRO-SPINAL MENINGITIS IN AN INFANT TWO MONTHS
(557) OLD.** LOUIS FISCHER, *N.Y. Med. Journ.*, March 26, 1910.

A CASE is reported in which, after several unsuccessful attempts at lumbar puncture, the diagnosis was made by tapping the lateral ventricles. Intraventricular injections of Flexner's anti-meningitis serum were given, and recovery took place. The aspirating needle was introduced at right angle of anterior fontanelle, downwards and toward the medium line, at an angle of about 20 degrees, to a depth of about 4·5 centimetres. The quantity of serum introduced should equal, but never exceed, the quantity removed.

D. K. HENDERSON.

EPIDEMIC CEREBRO-SPINAL MENINGITIS COMPLICATED BY
 (558) **ORCHI-EPIDIDYMITIS WITH DEFERENTITIS AND VESICULITIS.** (*Méningite cérébro-spinale épidémique, compliquée d'orchi-épididymite avec déférentite et vésiculite.*) SALEBERT, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, xxx., 1910, p. 65.

A SOLDIER developed inflammation of the left spermatic tract on the sixth day of an attack of cerebro-spinal meningitis. There was no history nor evidence of gonorrhœa, and a catheter had not been used. Though more frequent than meningeal localisations of the gonococcus, genital complications of cerebro-spinal meningitis are very rare. Other cases have been recorded by L. Pick and Schottmüller. Though no bacteriological examination of the urine was made, Salebert regards the complication as due to the meningococcus which had reached the genital tract *via* the kidneys, renal bacteruria being found in cerebro-spinal meningitis as in other acute infections.

J. D. ROLLESTON.

CO-EXISTENCE OF THE MENINGOCOCCUS AND TUBERCLE
 (559) **BACILLUS IN THE CEREBRO-SPINAL FLUID IN MENINGITIS.** (*Présence simultanée dans le liquide céphalo-rachidien des méningitiques du méningocoque de Weichselbaum et du bacille de Koch.*) M. LUTAUD, *Thèses de Paris*, 1909-10, No. 450.

THE writer has collected eighteen cases, including two not hitherto published, but only six of these could withstand criticism. In Combe's case (*v. Review*, 1910, p. 432) the meningococcic character of the infection was established by the precipito-reaction only, without being corroborated by the presence of Weichselbaum's organisms either in the smears or the cultures. This association of the two infections is most likely to be met with during an epidemic of cerebro-spinal meningitis. It is difficult, if not impossible, to tell which of the two infections preceded the other. Treatment by anti-meningococcic serum is indicated, but the prognosis in any case is bad.

J. D. ROLLESTON.

MENINGEAL REACTIONS IN CERTAIN INTOXICATIONS AND
 (560) **THEIR CYTO-DIAGNOSIS.** (*Les réactions méningées au cours de quelques intoxications et leur cyto-diagnostic.*) J. DE FONTBONNE, *Thèses de Paris*, 1909-10, No. 256.

THE thesis deals with the meningeal phenomena of lead poisoning, alcoholism, carbon monoxide poisoning, and uræmia. In lead

poisoning three varieties of meningeal reaction may be met with : (1) A latent meningitis revealed by lumbar puncture only, and characterised by a slight degree of lymphocytosis ; (2) an acute meningitis characterised by an abundant lymphocytosis ; (3) a chronic meningitis which may simulate general paralysis, and also attended with lymphocytosis. Alcoholism being essentially a disease of the cerebral cortex, cyto-diagnosis as a rule is negative. Carbon monoxide poisoning causes an intense meningeal congestion, as revealed by the presence of blood and leucocytosis in the cerebro-spinal fluid. Acute convulsive uræmia is sometimes accompanied by a transient polynucleosis. In chronic uræmia the existence of a meningeal reaction is not established. The thesis contains the histories of twenty-one cases, four of which are original.

J. D. ROLLESTON,

DECOMPRESSION IN THE TREATMENT OF MENINGITIS. J. F. (561) HULTGEN, *Amer. Journ. Med. Sci.*, March 1910.

FOUR cases of meningitis are reported in which a cure was effected after lumbar puncture.

D. K. HENDERSON.

THE HOUR OF OCCURRENCE OF HEMIPLEGIA WITH SUDDEN ONSET. (L'heure de l'hémiplégie à début brusque.) A. LE COUËDIC, *Thèses de Paris*, 1909-10, No. 382.

THIS thesis, inspired by Professor Pierre Marie, is based on the study of 306 case records and the results of personal inquiries put to 73 hemiplegic patients at the Hospice de Bicêtre. In only 141 of the 306 case records was the time of onset stated ; in 102 it occurred during the night, almost always during the second half, and in 39 during the day. Fifty-one of the 73 patients personally questioned stated that the hemiplegia had taken place at night, usually during sleep, and almost always between midnight and their usual time for getting up. Those who could give more definite information usually fixed the onset between 3 A.M. and 4 A.M.

The occurrence of hemiplegia at this time is attributed to the fact that the condition of cerebral ischæmia normally present in sleep is succeeded by a sudden increase in the arterial pressure in the cerebral circulation, the causes for this rise of pressure being (1) a lowering of the external temperature ; (2) dreams, and especially the nightmares so frequent in alcoholics, who formed a large section of the patients ; and (3) the act of sudden awakening.

J. D. ROLLESTON.

A REPORT OF THREE PRE-FRONTAL TUMOURS. DERCUM,
(563) *Journ. of Nerv. and Ment. Dis.*, Aug. 1910, p. 465.

THREE typical cases of this nature are described, and a short account given of the post-mortem examination of the two in which an operation was performed. No new points of interest are brought out.

ERNEST JONES.

TUMOUR IN THE REGION OF THE CORPORA QUADRIGEMINA.
(564) R. T. WILLIAMSON, *Med. Chron.*, Aug. 1910.

THE patient was a girl aged 14. The chief early symptoms were headache, vomiting occasionally, and double optic neuritis. Vision gradually failed. The first, third, fifth, sixth, seventh, eighth, eleventh, and twelfth cranial nerves were not affected. At the end of eight months ataxia developed, and soon became very marked. There was a definite tendency to fall forwards. At the latter part of the illness mental symptoms were well marked. For the last two weeks of life the patient was in a semi-comatose condition, and the movements of the eyeballs could not then be examined; but previous to this period there had been no paralysis of the muscles supplied by the third and sixth cranial nerves.

The autopsy revealed a cystic tumour (sarcoma) in the region of the corpora quadrigemina. The growth was above the superior peduncles of the cerebellum; it pressed upon the anterior part of the cerebellum, but did not actually invade it. Nothnagel considered that in a case presenting the general symptoms of intracranial tumour, the occurrence of ataxia and ophthalmoplegia (more or less complete), as early symptoms, suggested a lesion of the corpora quadrigemina. But these localising symptoms are not always present. In another case of tumour in the region of the corpora quadrigemina, previously recorded by the author, there was ataxia with a tendency to fall forwards, but no paralysis of the third and sixth cranial nerves.

In all cases presenting the symptoms of intracranial tumour, when there is ataxia with a tendency to fall *forwards*, the question of tumour in the region of the corpora quadrigemina should be considered, and careful examination for signs of paralysis of the fourth cranial nerve should be made. Such signs would be in favour of localisation of the growth to the region of the corpora quadrigemina. Extensive paralysis of other ocular muscles would be additional evidence in favour of this localisation.

AUTHOR'S ABSTRACT.

A CASE OF GUMMA OF THE DURA WITH AUTOPSY. B. R.
(565) TUCKER, *N.Y. Med. Journ.*, March 5, 1910.

THE case is reported because the situation of the tumour is deemed of interest, and because there was a separate lesion causing a third nerve paralysis which complicated the symptom complex.

At autopsy the left lobe of the cerebellum was broadened and flattened, and the tumour, which was closely attached to the inner surface of the dura, occupied the sulcus vallecule on the caudal or inferior surface of the cerebellum, and pressed into the left cerebellar hemisphere without being attached to it. The tumour extended from the anterior to the posterior cerebellar notch, with the anterior extremity resting upon the lower part of the dorsum of the medulla.

D. K. HENDERSON.

OPERATION FOR GLIOMA OF THE THIRD LEFT FRONTAL
(566) **CONVOLUTION.** (*Operiertes Gliom der III. linken Stirn-*
wendung.) COLER, *D. Med. Woch.*, No. 32, 1910, S. 1481.

THE patient, a female æt. 37, had headache, nausea, slowing of the pulse, double optic neuritis, and paresis of the right upper limb and right side of the face.

There was occasional spasm of the right facial muscles. There was complete motor aphasia for speech and writing. Written and spoken speech were well understood. At the operation a soft glioma was found in the left inferior frontal convolution, involving particularly the pars triangularis and the pars opercularis. The tumour was removed, with a margin of healthy brain tissue. Three and a half months later the paresis of the muscles was practically gone, and the patient felt well, but the motor aphasia showed little improvement.

JAMES M. GRAHAM.

THE PATHOGENY OF HYPOPHYSEAL SYNDROMES, &c. (*Essai*
(567) *sur la pathogénie des syndromes hypophysaires en général et de*
l'acromégalie en particulier.) LEVI, *L'Encéphale*, May 1910,
p. 565.

THE persistence of the cranio-pharyngeal canal in the normal adult is excessively uncommon, hence its relative frequency in acromegalics and giants is probably of special significance.

It suggests that the pathological process underlying acromegaly and gigantism must commence at some point relatively early in embryonic life, when the cranio-pharyngeal canal is still permeable. Probably this embryonic alteration begins to produce its effect on

general development when the organism begins to reach maturity. This accords with the view that the hypophyseal changes result in gigantism when the ossification of the skeleton is still incomplete, and in acromegaly when the epiphyses are ossified. Hereditary acromegaly is an ascertained clinical fact.

The significance and importance of the facts of acromegaly, gigantism, infantilism, degeneratio adiposo-genitalis, etc., have been greatly increased by recent researches on accessory hypophyseal structures. We find almost constantly in the human foetus (1) an accessory cranial hypophysis, underneath the cerebral hypophysis, in the thickness of the dura mater lining the bottom of the hypophyseal fossa; (2) another in the cranio-pharyngeal canal itself; (3) a pharyngeal hypophysis in the thickness of the pharyngeal mucosa. The last is constant also in the adult, in the periosteal lining of the under surface of the basi-sphenoid. In histological characters it is strictly comparable to the anterior lobe of the pituitary, and presents also features analogous to the layer of epithelial cells in apposition to the nervous part of the pituitary.

The existence of this pharyngeal hypophysis is of prime importance, and fresh pathological examinations, including the accessory hypophyses, are urgently required in all cases of bodily dystrophy, osseous or otherwise.

S. A. K. WILSON.

A CASE OF DISEASE OF THE HYPOPHYSIS. F. W. MARLOW, (568) *N.Y. Med. Journ.*, April 10, 1910.

A SHORT synopsis is given of some recent experimental work by Cushing, and a case is reported in which some improvement of visual acuity has occurred after treatment with thyroid extract.

D. K. HENDERSON.

THE X-RAY DIAGNOSIS OF TUMOURS OF THE HYPOPHYSIS. (569) F. JANGEAS, *Arch. of the Roentgen Ray*, Aug. 1910, p. 87.

THE focus tube and the subject are always placed in a definite fixed position. The plate is placed parallel to the antero-posterior median plane of the head, the focus of the anti-cathode being placed on the prolongation of the transverse axis of the sella turcica. The most constant characteristic of hypophyseal hypertrophy is an alteration of the quadrilateral plate. This may vary from a slight wearing away to a complete disappearance of the posterior clinoid process.

The paper is illustrated by skiagrams.

W. G. PORTER.

OPERATIONS ON THE HYPOPHYSIS. FREIH. V. EISELSBERG,
(570) *Ann. of Surg.*, July 1910, p. 1.

PHYSIOLOGICAL and clinical observations have clearly demonstrated the influence of the anterior part of the hypophysis upon growth, deposit of fat, genital function, etc. Carcinomatous, sarcomatous, adenomatous, and cystic tumours occur. The total number of cases operated on is still small. The writer has operated successfully on three cases of hypopituitarism, the first a carcinomatous cyst, the second a sarcoma, and the third a simple cyst. The after results were excellent. Two cases of acromegaly, which proved to be due to malignant disease, died respectively forty-eight hours and three days after operation. Lastly, a patient suffering from a combination of hypopituitarism and acromegaly had a carcinomatous tumour removed with the happiest results. For the operation the nasal route is much preferable to the intracranial. The nose is temporarily resected and reflected to the right, and the hypophysis reached *via* the nasal cavity, frontal sinus, and sphenoidal sinus.

HENRY J. DUNBAR.

PARESIS OF THE FOURTH NERVE FOLLOWING OPHTHALMIC
(571) **ZOSTER.** (Parésie du pathétique à la suite du zona ophtalmique.) L. LEPLAT, *Ann. de la Soc. Méd.-Chi. de Liège*, Aug. 1910, p. 223.

A WOMAN, aged 28, developed ophthalmic zoster on April 18 without any ocular symptoms beyond slight ciliary injection and photophobia. On May 27 she complained of difficulty of vision, and was found to have diplopia due to paresis of the superior oblique.

Only two other cases of pathetic palsy following ophthalmic zoster have been recorded (Caspar, Lessen).

J. D. ROLLESTON.

THE ALLEGED RELATION OF THE CERVICAL SYMPATHETIC
(572) **TO THE SIXTH CRANIAL NERVE.** (Über die angebliche Beziehung des Halssympathikus zum Nervus Abducens.) STIGLER, *Zentralbl. f. Physiol.*, Nr. 8, 1910, S. 318.

It has been stated by E. Brücke that the external rectus muscle obtains its nerve supply partly from the sixth nerve and partly from the cervical sympathetic, and that when the latter is cut the muscle is overcome by its antagonist, the rectus internus, and internal strabismus produced.

The question has been re-investigated by the present author,

who fails to confirm Brücke's observations. In the case of the cat neither on stimulation of the sympathetic nor on section is any turning of the eyeball produced. With rabbits the author confirms Hesse's observation that the eyeball sinks in on sympathetic stimulation.

A backward rotation occasionally observed after stimulation of the uninjured sympathetic is apparently associated with reflex movements conditioned by excitation of sensory fibres.

When the seventh nerve is divided on one side there is no backward movement of the corresponding eyeball on stimulation of the sympathetic, but the other eyeball shows this movement. The movement is therefore a passive one produced by the muscles of the eyelids.

W. A. JOLLY.

DEAFNESS DUE TO LESIONS IN THE BRAIN. ALLEN STARR,
(573) *Journ. of Nerv. and Ment. Dis.*, July 1910, p. 401.

AFTER referring to the fact, which he considers established, that destruction of both temporal lobes leads to total deafness, Starr points out that this may also be brought about by pontine lesions. He narrates an interesting case of crossed motor and sensory hemiplegia, in which the patient was totally deaf on both sides for the remaining eight years of her life. No autopsy was performed, but he infers that the lesion was an extensive thrombosis implicating the lemniscus and formatio reticularis. Ten similar cases in the literature are quoted. He concludes that (1) Deafness may be produced by lesions of the pons varolii; (2) the deafness will be on the side of the lesion if the acoustic nucleus only is affected; (3) the deafness will be bilateral if the trapezoid fibres are involved at their decussation in the raphé; (4) the deafness will be on the side opposite to the lesion if the superior olivary nucleus and the lateral part of the lemniscus are affected in the pons.

ERNEST JONES.

CIRCUMSCRIBED MOTOR PARALYSIS AND CUTANEOUS
(574) **ANÆSTHESIA FOLLOWING INJURY OF THE CEREBRAL**
CORTEX. W. M. LESZYNSKY, *N. Y. Med. Journ.*, April 30,
1910.

THE case reported seems to confirm the view of Mills and Weisenburg that "the representation of cutaneous and muscular sensibility in the cortex is sub-divided after the manner of motor representation, the areas of representation motor and sensory being not anatomically identical."

The case is that of a young man who sustained a comminuted

fracture of the left parietal bone an inch and a half long and three-quarters of an inch wide, extending to the median line. This trauma caused a complete paralysis of all the muscles below the knee on the right leg. The faradic reaction was normal in all of the paralysed muscles.

When examined four months after the injury the paralysis had disappeared, but he complained of a feeling of weakness in the right lower extremity; right knee and Achilles' jerks were exaggerated, and Babinski sign was present on right side.

There was an area of complete anæsthesia extending from the toes to about two and a half inches below the patella anteriorly, and to about three inches below the popliteal space posteriorly, with a circular band of dissociated sensory disturbance above this. For two inches above the level of complete anæsthesia the tactile and temperature sensibility were abolished and the pain sense preserved. For one inch and a half further up thermo-anæsthesia persisted without impairment of other forms of sensibility.

The case is unique, inasmuch as the traumatism is analogous to a physiological experiment upon the cerebral cortex, the motor and sensory impairment being limited to the distal portions of the lower extremity.

D. K. HENDERSON.

STRIKING RESULTS OF SCRATCHING IN A HYSTERICAL
(575) **SUBJECT. (Auffallende Kratzeffekte bei einer Hysterika.)**

POLLAND, *Dermat. Ztschr.*, Aug. 1910, S. 564.

POLLAND reports the case of a female, aged 26, who for four weeks had had severe itching all over the skin, and lesions were said to have appeared spontaneously on various parts of the body. She showed all over the body and limbs on all parts, which were accessible to the hands, linear lesions arranged in parallel rows. The recent lesions were fairly deep, showing some destruction of the skin, and were covered by blood-crusts. The older lesions were pigmented, and many of them had left distinct scars. From the linear appearance, and the fact that the distribution was only on places readily reached by the fingers, the lesions were undoubtedly self-inflicted, although the patient denied having done anything to produce them. Whilst in hospital she vomited blood and passed blood per rectum. Clinically no signs of gastric ulcer could be found.

Polland considers both the skin and stomach conditions to be of nervous origin. The patient showed an extensive and very marked diminution of sensitiveness to pain all over the skin. Pins could be deeply inserted into the skin without any pain, and that fact accounted for the depth of the skin lesions, which were much more severe than are usually produced by scratching the normal skin.

R. CRANSTON LOW.

A MODERN CONCEPTION OF THE PSYCHO-NEUROSES. ERNEST
(576) JONES, *Interstate Med. Journ.*, Aug. 1910, p. 567.

THIS is mainly an exposition of Freud's views on the subject. Stress is laid on the fact that the term "neurasthenia" is commonly misapplied to quite independent conditions, such as obsessions, anxiety states, cyclothymias, etc.; fewer than 1 per cent. of cases diagnosed as this condition are really cases of neurasthenia. The mechanisms common to all psycho-neuroses—namely, mental conflict, symbolic representation of repressed, unconscious wishes, etc.—are discussed, and the sexual origin insisted on. A bibliography of the whole Freudian literature in English is added.

AUTHOR'S ABSTRACT.

DREAMS AND THEIR RELATION TO THE NEUROSIS. A. A.
(577) BRILL, *N.Y. Med. Journ.*, April 23, 1910.

IN developing his psychology of the psychoneuroses Freud found that the dream played a very important part in the psyche of the individual. The dream is not a senseless jumble but a perfect mechanism, and when analysed it is found to contain the fulfilment of a wish. It always treats of the inmost thoughts of the personality, and for that reason gives us the best access to the unconscious. No psychoanalysis is complete without the analysis of dreams. The dream not only helps us to interpret symptoms, but is often an invaluable instrument in diagnosis and treatment. The causative factors of many neuroses are extremely vague, and usually unconscious to the patient, and it is by means of the dream that the underlying ætiological factors are disclosed. It was Freud who first called attention to the motives of forgetting, and he pointed out that we mostly try to forget or repress those impressions which have been painful or disagreeable to us.

If the repressed material should come to the surface again—whether in the form of dreams, in psychoneurotic symptoms, or in the utterances or manifestations of the insane—it is unrecognisable to the individual, as it is always so distorted by symbolism.

A case is reported and an analysis of a dream is given.

D. K. HENDERSON.

TELEPHONE OPERATORS' NEUROSIS. M. V. THÉBAULT, *Presse*
(578) *Méd.*, No. 66, p. 630.

A DEFINITE neurasthenia of telephone girls occurs in Paris, where the conditions of work at the Exchanges are not as perfect as they might be. The symptoms are those of a general neurasthenia—

headache, neuralgia, alteration in temperament, digestive disturbances, constipation, insomnia, loss of self-control, and a degree of hypochondriasis. The author recommends hydrotherapy in addition to tonic treatment and removal of the cause (temporary or permanent).
HENRY J. DUNBAR.

REFLEX NASAL NEUROSES. C. M. STEWART, *The Montreal Med. (579) Journ.*, Aug. 1910, p. 628.

THERE is nothing new in this paper. It contains remarks on hay fever, asthma, and paroxysmal sneezing.
W. G. PORTER.

LABYRINTHINE NEURASTHENIA. (*Labyrinthogene Neurasthenie.*) (580) G. ALEXANDER, *Wien. med. Wchnschr.*, 1910, Nos. 29 and 30.

PATHOLOGICAL labyrinthine nystagmus cannot be produced by hysterical individuals; on the other hand, pathological nystagmus, when present, may be modified in hysteria and neurasthenia.

Care must be exercised in pronouncing on the severity of a case of traumatic injury to the labyrinth where there is in addition traumatic neurosis; a simple case may then give the clinical appearance of a serious lesion and lead to an incorrect prognosis.

Alexander has observed three cases which illustrate the combination of hysteria, neurasthenia, and labyrinthine disease. In two the neurasthenia was fostered, if not produced, by long-standing conservative treatment of middle-ear suppuration. In neither was the radical mastoid operation performed till objective labyrinthine symptoms were present, yet healing was rapid in each case. The patients were intelligent individuals who, by numerous consultations and by reading, were fully informed as to the nature of their condition and its danger, and they were both sent to him after the lapse of two years to see if a labyrinth operation were necessary. On examination the objective signs showed that the labyrinth was healthy in each; operation was therefore refused. The assurance as to the healthy condition of the labyrinth had a most satisfactory effect on both patients, their symptoms gradually diminished.

The third case was one where an old-standing middle-ear suppuration had healed, leaving symptoms of labyrinthine disease, without, however, any objective evidence of disease. The assurance that no operation was necessary had the effect of relieving the patient of his symptoms.
W. G. PORTER.

THE DIAGNOSIS AND TREATMENT OF CARDIO-VASOULAR

(581) **NEUROSES.** (*Die Diagnose und Behandlung der Herz- und Gefäßsneurosen.*) RUMPF, *Deutsche med. Wchnschr.*, 1910, xxxvi., 1305, 1353.

IN a somewhat discursive article the author defines the cardio-vascular neuroses as those affections of the circulatory system in which no abnormality regarding the size of the heart, the condition of the vessels, the blood pressure, the distribution of the blood, and the excretion of urine, can be detected, and in which the history and progress of the case corroborate the original diagnosis. Cardiac pain, palpitation, fluttering, extra-systoles, tachycardia, and other phenomena are discussed. The general principles of treatment are considered under the headings of diet, massage, gymnastics, hydrotherapy, electricity, and drugs.

W. T. RITCHIE.

SCIATIC NEURALGIA. CURE BY TWO INJECTIONS OF .08

(582) **CENTIGR. OF COCAINE.** G. CAUSSADE and P. QUESTE, *Journ. de Méd. de Paris*, No. 29, p. 501.

THE patient, a man of 50 years, had suffered from very severe sciatica for six months. An interval of four days separated the two injections, and the patient was discharged cured a few days later. This method of treatment is not so efficacious in old-standing cases as in recent ones. Cases in which the onset is sudden respond better than those in which it is gradual. When the sciatica is due to neuritis or to compression, no benefit is obtained. The writer thinks that the cocaine injected is absorbed into the general circulation, and finds difficulty in explaining the localising action of the drug.

HENRY J. DUNBAR.

DISTURBANCES OF THE THYROID SECRETION IN NORTHERN

(583) **MEXICO.** W. C. ALVAREZ, *Amer. Jour. Med. Sci.*, Vol. 140, No. 1, July 1910, p. 59.

THE author first points out that there are regions in Mexico where goitre is endemic, and proceeds to discuss a condition very prevalent there, which is neither myxœdema nor exophthalmic goitre. It is to be regarded as an intermediate condition, in which certain symptoms associated with increased thyroid secretion are present together with those of diminished secretion. He describes seven cases, and gives a short discussion of their nature.

A. NINIAN BRUCE.

CALCIUM METABOLISM, WITH SPECIAL REFERENCE TO
(584) **EXOPHTHALMIC GOITRE.** C. TOWLES, *Amer. Journ. Med. Sci.*, Vol. 140, No. 1, July 1910, p. 100.

THE thyroid gland is associated with metabolism changes, which have been investigated frequently in exophthalmic goitre for nitrogen, showing a loss of nitrogen in the later and more severe stages of the disease. This paper deals with the changes in calcium metabolism, in exophthalmic goitre, and it was found that the calcium metabolism showed no special peculiarity. Where there is a loss of nitrogen there is also a parallel loss of calcium.

A. NINIAN BRUCE.

THE SYNDROME OF TOTAL APHASIA. BEDUSCHI, *L'Encéphale*, (585) July 1910, p. 21.

IN one case of total aphasia the lesions were confined to the base of the second left temporal convolution and the subcortical matter of the supramarginal and angular gyri. In another case, where the lenticular zone and Broca's area were intact, and where the lesion was in much the same position as in the first case, the clinical symptoms were not merely word-deafness, but also a gross reduction of spontaneous speech to a few confused monosyllables. Cases such as these, of which a number carefully examined and recorded are known (Gowers, Bastian, Dejerine) support the objections which anatomists and clinicians have raised to the views advocated by Marie and Moutier. Beduschi gives a lucid interpretation of the clinical and pathological findings in his cases.

S. A. K. WILSON.

THE RELATION OF STUTTERING TO AMUSIA. BOSWORTH
(586) M'CREADY, *Journ. of Amer. Med. Assoc.*, July 16, 1910, p. 208.

STUTTERING is to be regarded as a developmental defect caused by biologic variations in centres and commissures through which are derived perceptions of music and rhythm. The inco-ordination resulting from this is between the nervous mechanism controlling the acts of vocalisation and articulation and the centres having for their function the application and expression of melody and harmony. Practically all stutterers habitually speak in a monotone, and this is a factor of great importance both in consideration of the etiology and from the standpoint of treatment. This monotonous voice is due to a biologic variation in one of the music centres or its commissures, probably in the kinesthetic

centre or the commissure between it and the auditory music-centre. In treatment of stuttering, every effort should be made to imprint musical impressions and to allow of their expression by the employment of music, dancing, rhythmical movements, drawing, etc. In right-handed individuals speech is controlled from the left hemisphere, and the use of the left hand is of the greatest use in developing the functions of the right undamaged hemisphere.

HENRY J. DUNBAR.

PSYCHIATRY.

SCHEME FOR A STANDARD MINIMUM EXAMINATION OF (587) MENTAL CASES FOR USE IN HOSPITALS FOR THE INSANE. W. A. WHITE, *Amer. Journ. of Insanity*, July 1910, p. 17.

THE scope of this useful paper is indicated in the title.

ERNEST JONES.

SPIRITUALISM AND INSANITY. (*Spiritisme et folie.*) LÉVY-VALENOI, *L'Encéphale*, June 1910, p. 696.

AN interesting review of current opinion which does not lend itself to condensation in the form of an abstract. The author's propositions are that spiritualism is the resort of religious discontents. Among them are a vast number of degenerates, in whom manias of various sorts are prone to develop. "Mediumnity" is a condition which prepares the way for the development of mania: the spiritualistic lunatic is simply a "medium" whose "trance" is continuous and involuntary. The feature of this form of mental impairment is the tendency to hallucinations. Treatment consists in isolation, the removal of the individual from his spiritualistic environment, the endeavour to reawake in him a sense of personality, and in constant suggestion to counteract the tendency to automatism.

S. A. K. WILSON.

A STUDY OF ASSOCIATION IN INSANITY. KENT and ROSANOFF, (589) *Amer. Journ. of Insanity*, July 1910, p. 37.

THIS article consists of statistics showing the relative frequency of different reaction-words in a fixed association test. No individual study is attempted.

ERNEST JONES.

MENTAL CHANGES IN SLEEPING SICKNESS. (Troubles (590) psychiques dans la maladie du sommeil.) MARTIN and RINGENBACH, *L'Encéphale*, June-Aug. 1910, pp. 625 and 97.

HUMAN trypanosomiasis is a generalised toxic disease in which the nervous system is the seat of election of the toxin, and it provides no exception to the general nosological rule, that infection and intoxication manifest themselves by mental confusion, oniric mania, and dementia præcox in a wide sense. Trypanosomiasic mental disturbances form a clinical type of mental confusion, based on a foundation of marked dementia. Hence there are constantly cerebral torpor, stupor, sleepiness or sleep, mental obtusion, amnesia, disorientation, hallucinatory oniric mania, and catatonia. Melancholic, expansive, and manic-depressive states also occur. Hallucinations of all sorts, obsessions and fixed ideas are met with not infrequently. Impulsions to theft, vampirism, homicide, incendiarism, and suicide are more rare. In the French Congo (where the authors are stationed) veritable "epidemics" of mental outbreaks occur. Psychological symptoms are identical in European and native.

Trypanosomiasic dementia is to be distinguished from alcoholic and epileptic dementia, from cerebral syphilitic insanity and general paralysis. The pathological changes found in the brain are very like those of general paralysis. S. A. K. WILSON.

A CASE OF MYTHOMANIA. (Un cas de mythomanie : escroquerie (591) et simulation chez un épileptique.) BELLETRUD and MERCIER, *L'Encéphale*, June 1910, p. 677.

FROM childhood the patient evinced a desire for adventures and a tendency to fabulation. In his youth he simulated several attempts at suicide. Since, his life has been made up of one long series of deceptions and feigned criminal acts. Falling into the hands of the law he at once proceeded to simulate insanity. Even when his methods were completely exposed he persisted in the deception. The authors discuss the relation of the mythomania to the epilepsy from which the patient suffered.

S. A. K. WILSON.

ALCOHOLIC AMNESIA AND AUTOMATISM. PILGRIM, *Amer. (592) Journ. of Insanity*, July 1910, p. 109.

THREE cases of this nature are briefly described. By means of hypnotism the forgotten memories could be restored. Pilgrim points out that such amnesias are not synonymous with unconsciousness of the lost memories, but with psychical dissociation with them.

ERNEST JONES.

**A STUDY OF THE DEMENTIA PRÆCOX GROUP IN THE
(593) LIGHT OF CERTAIN CASES, SHOWING ANOMALIES
OR SCLEROSES IN PARTICULAR BRAIN-REGIONS.**

SOUTHARD, *Amer. Journ. of Insanity*, July 1910, p. 119.

THIS paper, 58 pages long, gives a summary account of the post-mortem findings of "sixty-three cases of probable or possible dementia præcox"; many of the examinations were personally made by the author. The two main points of the paper are, perhaps, that gross, naked-eye changes in the brain are relatively frequent in dementia præcox, and that in the future topographic study of the brain provides a more hopeful outlook than detailed study confined to a few areas. Many interesting remarks are made on the general question of the relation of insanity to brain-disease. Thus: "There are reasons which make this equation:

Insanity = Brain-disease

really erroneous. In the first place, certain psychiatrists notwithstanding, modern work has shown that the equation should better read

Insanities = Brain-diseases,

and in the particular form

Some insanities = Brain-diseases

perhaps we should be inclined to accept at least the spirit of the statement." Southard points out, very logically, that "even the katatonic movement might conceivably prove a normal and proper reaction to some received stimulus."

ERNEST JONES.

**KERNIG'S SIGN: ITS PRESENCE AND SIGNIFICANCE IN
(594) GENERAL PARESIS AND ARTERIO-CAPILLARY FIB-
ROSIS.** S. STERN, *Journ. of Nerv. and Ment. Dis.*, Aug. 1910,
p. 496.

STERN found Kernig's sign in sixty-three out of seventy-five cases of general paralysis; it is always present in late cases.

ERNEST JONES.

**BACTERIAL INVASION OF THE BLOOD AND THE CEREBRO-
(595) SPINAL FLUID BY WAY OF MESENTERIC LYMPH
NODES: A STUDY OF FIFTY CASES OF MENTAL
DISEASE.** SOUTHARD and CANAVAN, *Boston Med. and Surg.
Journ.*, Aug. 4, 1910, p. 202.

THE research was undertaken as an extension of the recently published (*Centralbl. f. Bakt.*) work of Gay and Southard on the

post-mortem bacteriology of the heart's blood and cerebro-spinal fluid in 100 cases of mental disease. The blood is thought to be a frequent path of infection for the nervous system, and the investigation was carried out with a view to determine whether the lymphatic system was also a route for the meninges. In a case lately published by one of the authors—that of a general paralytic who developed typhoid—infection of the meninges had evidently taken place by way of the mesenteric glands and the lymphatics. As a preliminary to further work on this subject the writers bacteriologically investigated the blood, the cerebro-spinal fluid, and the mesenteric lymph nodes of fifty unselected cases.

They discuss their findings in relation to the percentage of cases giving positive cultures (cerebro-spinal fluid, 85 per cent. ; blood, 80 per cent.; node, 78 per cent.), to the presence of various cocci and bacilli, and to colibacillosis.

F. ESMOND REYNOLDS.

EXAMINATION OF THE CEREBRO-SPINAL FLUID AS AN AID
(596) **TO DIAGNOSIS IN CERTAIN CASES OF INSANITY, WITH**
SPECIAL REFERENCE TO THE PROTEIN REACTION DE-
SCRIBED BY ROSS AND JONES. JOHN TURNER (Essex),
Journ. of Ment. Sci., July 1910, p. 485.

USEFUL as the Wasserman reaction is, there are two objections to it which make the discovery of simpler methods most welcome. Firstly, it is complicated, and can only be carried out by skilful observers and in up-to-date laboratories which are licensed. Secondly, its reaction is positive in cases suffering from syphilis in nearly all its stages, and this may mislead the observer who is looking for syphilis of the nervous system or general paralysis.

The protein reaction of Drs G. W. Ross and E. Jones differs from it in that it is only positive in cases of general paralysis, tabes, tertiary syphilis, and syphilis of the nervous system.

It "consists in the addition of clear cerebro-spinal fluid to a saturated solution of ammonium sulphate in such a manner that the fluid lies on the reagent without blending with it." When positive, a sharply-defined thin white film appears at the junction of the fluids.

The cell count is another valuable diagnostic test, and with the reaction just referred to, is of great value in diagnosing early stages of general paralysis.

Other tests—more of academic interest—are mentioned and numerous cases quoted.

W. SCOTT WATSON.

**VARIATION OF THE SUGAR-CONTENTS OF THE CEREBRO-
(597) SPINAL FLUID IN PSYCHIC DISEASES.** (Ueber Schwankungen im Zuckergehalt des Liquor cerebrospinalis bei psychischen Erkrankungen.) HESS und PÖTZL, *Wien. klin. Wchnschr.*, No. 29, 1910.

THE authors studied the percentage of the sugar in the cerebro-spinal fluid of seventeen patients suffering from various psychic diseases. Notes are given of each of these cases. The paper discusses the chief views which have been advanced as to the nature and origin of the Fehling reducing substance.

Their research shows that in different psychic diseases (dementia præcox, epilepsy, acute psychoses) the sugar-contents varies very much in amount. In some cases the amount varies in the same patient during different phases of the illness. Such variation occurs in cases in which there is no arrest of an inflammatory process. The sugar-contents varies from 0 to 0.5 per cent.

The majority of writers are inclined to doubt that the Fehling reducing substance is glucose. F. ESMOND REYNOLDS.

**SYPHILIS IN INSANITY AS DETERMINED BY THE WASSER-
(598) MANN REACTION.** ENSOR, *Journ. Amer. Med. Assoc.*, July 16, 1910, p. 216.

THE Wassermann reaction was applied to the 262 male patients of Mount Hope Retreat, and positive findings were given in 58 of these (22 per cent.). Syphilitic infection was admitted by only 3 per cent. of the 262 patients, though most of them acknowledged exposure. Of those who admitted previous syphilis, 2.6 per cent. gave negative findings. Of 27 cases of paresis collected from all sources, the reaction was positive in 96 per cent. Of 7 cases of tabes, 83 per cent. gave positive findings. Of 5 cases of cerebral syphilis, positive reactions were obtained in 4: the case failing to give a positive reaction had been receiving mercurial inunctions for the previous six months. F. ESMOND REYNOLDS.

**AN EXAMINATION OF THE BLOOD-SERUM OF IDIOTS BY
(599) THE WASSERMANN REACTION.** H. R. DEAN, *Lancet*, July 23, 1910, p. 227.

THE author examined 330 patients in the Wilhelmstift Asylum for Idiots at Potsdam. The technique employed was Wassermann's original method. Fifty-one cases (15.4 per cent.) gave a positive reaction, and of these 13 showed clinical evidence of congenital syphilis. The cerebro-spinal fluids of 12 patients whose

blood serum had given a positive reaction were submitted to the test, and of these only 1 gave a positive finding. Blood serum of the parents of 10 of those patients in whom a positive reaction had been given was obtained, and of these (13 in all) 9 gave positive results. The author further found that the percentage of positive results in the patients examined diminished rapidly after the sixteenth year, and hence, in estimating the prevalence of congenital syphilis, the age factor must be taken into account. The writer concludes that it is doubtful if there is any casual relationship between syphilis and idiocy, but nevertheless suggests that the blood serum of pregnant women should be subjected, as a routine practice, to the Wassermann reaction, and if a positive result is obtained, antisyphilitic treatment should be given to the mother and afterwards to the child. F. ESMOND REYNOLDS.

TREATMENT.

HYPNOTISM IN TREATMENT AND IN FORENSIC MEDICINE.

(600) (*De l'hypnotisme en thérapeutique et en médecine légale.*)

J. BABINSKI, *La Sem. méd.*, July 27, p. 349.

In this paper Babinski makes his profession of faith with regard to hypnotism. In the first place he considers the characters of the condition commonly called "hypnotic sleep," and rejects entirely the objective somatic characters (neuro-muscular hyperexcitability and catalepsy) which Charcot considered as specific and incapable of being reproduced voluntarily. He regards it merely as a perturbation of the nervous system, of which one of the consequences is an increase in suggestibility. The condition is a real one, but is very easily capable of simulation, and in many of its manifestations there is an element of farce. With regard to some of the principal characters attributed to hypnotism he states categorically (1) that a person can not be hypnotised against his will; (2) a hypnotic subject remains quite aware on awakening of what has occurred during the sleep; (3) that he is not unconscious when in the lethargic state; (4) he does not lose all power of will when hypnotised, and is not absolutely compelled to perform, either during or after the hypnosis, the acts suggested to him.

Hypnotism has many of the features of hysteria—the subjects of both have troubles in the reality of which they believe, but only within certain limits; both result from suggestion, and both disappear by persuasion. Hypnotism, being a product of suggestion, appears under many different aspects, but the hypnotic sleep is simply one manifestation of it.

Many hysterical subjects may be cured after having been hypnotised; the cure, however, is not a result of the hypnotism,

but simply of persuasion. Seeing that hypnotism neither creates nor augments suggestibility, it is absurd to use it as a therapeutic measure in place of suggestion and persuasion, with one exception, viz., in cases where the patients have made up their minds that they can be cured only by hypnotism.

From the opinions enunciated it follows, from a legal point of view, that hypnotic subjects must be considered as responsible for their acts; they are just as much master of their actions in the hypnotic state as they are in their ordinary one. Their readiness to fall into the hypnotic state might be considered as evidence of hyper-suggestibility, and thus be considered as in some degree limiting their responsibility, but it is emphatically not the hypnotisation which renders them more suggestible.

J. H. HARVEY PIRIE.

THE TREATMENT OF STATUS EPILEPTICUS BY LUMBAR (601) PUNCTURE. (*Le traitement de l'état de mal épileptique par la ponction lombaire.*) CASTIA, *L'Encéphale*, Aug. 1910, p. 120.

THE author reports four remarkable cases where the patients were almost *in extremis*, and where marked amelioration set in at once as the result of the withdrawal of 20 c.c. of cerebro-spinal fluid by lumbar puncture. It must be noted that the patients received medicinal treatment as well, but the author is satisfied that the success of the method does not depend on the exhibition of the bromides.

S. A. K. WILSON.

BOOKS AND PAMPHLETS RECEIVED.

J. Ramsay Hunt. "The Symptom-Complex of the Acute Posterior Poliomyelitis of the Geniculate, Auditory, Glosso-pharyngeal, and Pneumogastric Ganglia," *Arch. Intern. Med.*, June 1910; "Annali dell' Istituto Psichiatrico della R. Università di Roma," Vol. vii. Roma, 1910.

Bernard Hollander. "Mental Symptoms of Brain Disease." London: Rebman Ltd., 1910. 6s.

David Berry Hart. "Phases of Evolution and Heredity." London: Rebman Ltd., 1910. 5s.

Johannes Bresler. "Die Syphilisbehandlung mit dem Erlich-Hata'scher Mittel." Halle a. S.: Carl Marhold, 1910. M. 1.80.

N. Gierlich. "Symptomatologie und Differentialdiagnose der Erkrankungen in der hinteren Schädelgrube." Halle a. S.: Carl Marhold, 1910. M. 1.00.

G. Anton. "Über krankhafte moralische Abartung im Kindesalter." Halle a. S.: Carl Marhold, 1910. M. 1.00.

Achard, Marie, Gilbert-Ballet, Lévi, Lévi, et Laignel-Lavastine. "Sémiologie Nerveuse"; being Fasc. 31 of Brouardel et Gilbert's "Nouv. Traité de Méd." Paris: J. B. Baillière et Fils, 1911. Pp. 630. 12 fr.

Review of Neurology and Psychiatry

Original Articles

THE PRACTICAL VALUE OF THE WORD-ASSOCIATION METHOD IN THE TREATMENT OF THE PSYCHO- NEUROSES.

By ERNEST JONES, M.D., M.R.C.P. (London),
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Ontario Clinic for Nervous and Mental Diseases.

STUDY of the association-reactions, the inception of which we owe to Sir Francis Galton's work carried out over thirty years ago, has proved to be equally fruitful for both psychology and psycho-pathology, and is now one of the most valuable methods at our disposal for investigating the constellations of mental functioning. In a recent paper Gallus¹ remarks: "Of the modes of psychological investigation, with which science has already furnished us in such manifold form and for the most diverse purposes, none has found a richer or more extensive application in practice than the association test." At the present time the method is in regular daily use with a large number of neurologists and psychiatrists in Germany and America. During the past nine years the Zurich school, under the guidance of Bleuler, and particularly of Jung,² has very greatly increased

¹ Gallus. "Ueber Assoziationsprüfung," *Zeitschr. f. Psychother. u. mediz. Psychologie*, Feb. 1910, Band II., S. 106.

² Jung. "Diagnostische Assoziationsstudien," Band I., 1906 ; Band II., 1910.

the value of the method by the discovery of fundamental laws which had previously been overlooked, by the definite establishment of the theory of the procedure, and by the demonstration of its practical applicability. So far as I am aware, Jung's work has not been discussed by any English writer; in America it has met with wide recognition, and has already given rise to a considerable literature. The object of the present paper is to call the attention of those who may not be familiar with the method to some of its practical aspects, particularly as regards psychotherapeutics; for proper study of the subject Jung's indispensable volumes must be consulted.

The method has a number of advantages for the practising physician that unfortunately are absent in the case of many other recent discoveries in the same sphere of medicine. It is extremely simple of application, does not consume an undue amount of time, and needs no elaborate apparatus. Useful results can be obtained after a very short training, although, as might be expected, the value of these immensely increases with prolonged experience; it stands here in contrast with, for instance, the Wassermann reaction, where in the hands of those not carefully trained the results are quite valueless. It is not intended by this remark in any way to underestimate the importance of experience, but merely to point out that useful results, increasing in value as the observer's experience broadens, can be obtained almost from the first. The test makes no great demand on the patient, and is thus of wide applicability. All that he has to do is to call out the *first* word that comes to his mind after hearing the stimulus-word; after a short practice, with two or three examples, most patients are able to follow out this simple instruction. As to apparatus, all that is needed is a stop-watch, registering fifths of a second. The stimulus-words employed in the test should not be fewer than a hundred in number, and the choice of them is by no means a matter of indifference. They should always be words commonly used in everyday life, and therefore thoroughly easy of comprehension to all classes of patient. A certain grammatical variation is desirable, substantives, verbs, and adjectives being chosen in this (descending) order of frequency. Much variation in syllabic length is to be avoided, and it is better to choose words of one, or at most of two syllables. A certain number of what are

"critical" stimulus-words should be interpolated, particularly words that have more than one meaning, and which are likely to strike common "complexes"; the significance of this will presently be explained. The technique of taking the associations is slight and easily acquired; it takes much practice, however, to learn to observe and interpret various matters concerning the mode of the patient's response, tricks of behaviour, slips of the tongue, interjections, involuntary gestures, indications of emotion or embarrassment, and so on, which are often of the greatest assistance in the elucidation of the results. Thus, even before the reactions are studied and analysed in detail, it will have been possible for a trained observer to learn a great deal about the working of the patient's mind, though this knowledge of course needs to be amplified and confirmed or corrected by the further investigation of the individual reactions.

The reactions obtained can next be classified according to their form, a fairly simple matter. Many classifications have been suggested for this purpose, but as yet no completely logical one has been devised. The following scheme is satisfactory enough for most practical needs, and is perhaps the most widely employed; for special purposes each main group can be much further sub-divided and more closely studied.

A. *Intrinsic Association*. — "Continuity." An essential resemblance present between the meanings of the stimulus and reaction-words.

I. Co-ordination. Essential similarity between the two.
Exam. Apple—pear.

II. Predication. The reaction-word expresses some predicate, judgment, function, or attribute of the stimulus-word. Exam. Snake—poisonous.

An important sub-group here is the defining or explaining association. Exam. Book—something to read.

III. Casual dependence. The idea of causation implied in the response. Exam. Pain—tears.

B. *Extrinsic Association*.—"Contiguity." The resemblance present is a superficial or "chance" one.

- I. Co-existence. Simultaneousness. The two ideas connected through frequent simultaneous use. Exam. Pen—ink.
- II. Identity. Synonyms or nearly so. Exam. Effect—result.
- III. Motor-speech Forms. The two words connected through frequent use in daily expressions, proverbs, quotations, etc. Exam. Pen — sword. Cat — mouse.

C. *Sound Association*.—The resemblance between the two words being primarily an auditory one.

- I. Word completions. Exam. One—wonder.
- II. Clang. Exam. Line—lying.
- III. Rhyme. Exam. Cart—part.

D. *Miscellaneous*.

- I. Mediate. An indirect association, intelligible only on the assumption of an intermediary bond that does not appear in the reaction. The association of the bond may be any one of the forms mentioned above, and its relation to the stimulus-word (centripetal), and to the reaction-word (centrifugal), can be separately classified. Exam. of centripetal sound disjunction. Run—rifle (gun).
- II. Senseless. No discernible connection between the two words; in this case the reaction-word usually refers to some object in the immediate environment.
- III. Failure. No reaction at all.
- IV. Repetition of the stimulus-word. These last-mentioned forms will later be more fully discussed.

In the normal it will be found that, within a certain range, each of these different forms of association-reaction occurs with a fairly definite frequency-incidence, so that they can be stated in terms of percentages. This percentage-incidence varies according to certain factors and circumstances, some of which will presently be mentioned, but one can usually at once see if

the normal variations are grossly exceeded ; for instance, clang and rhyme associations rarely exceed two per cent. in the normal, whereas in mania they may reach ninety or even a hundred per cent. In different forms of mental disorder their relative incidence is disturbed, and often in quite typical ways that are of great value in diagnosis. Thus there are distinct association characteristics for idiocy, dementia præcox, melancholia, mania, hysteria, epilepsy, and toxic psychoses. In this respect association-reactions show some resemblance to a differential leucocyte count, the percentage disturbances of which often give important clues to the nature of the disease. Just as the leucocyte count shows certain variations in the normal according to sundry factors, such as the patient's age, the state of digestion, etc., so does the association incidence, and in both cases it is essential to know these normal variations before forming an opinion as to the significance of any deviation in a given case. A few examples of these may be given, though, as the matter has more relation to diagnosis than to treatment, it will not be specially discussed. The associations of a child differ from those of an adult in being more sensorial, and particularly visual, in character. They are more definitely conditioned by considerations of time and space, especially the latter ; this is because they refer to certain precise memories, and not to general concepts. The great majority of the associations belong to the "intrinsic" type. The associations in old age in several respects resemble those of the child, notably as regards the infrequency of motor-speech and sound associations, in the increase of intrinsic ones, and in the relative poverty of available language. They differ, however, from those of the child in being much more general, and not conditioned by given spatial and temporal memories. Still more important is the variation dependent on the level of education. Jung, in his detailed comparison of educated subjects with uneducated, found that with the former (1) clang associations were seven times as numerous as with the latter ; (2) egocentric reactions were twice as numerous ; (3) co-ordination and co-existence associations were much less frequent ; (4) senseless reactions were notably more frequent ; and (5) the agreement between the stimulus and reaction words in grammatical form and in length of syllable was much less. In other words, the association-re-

actions of the uneducated were of a decidedly higher quality than those of the educated, which resemble those that can be experimentally produced by artificial distraction of the attention, and approximate to those found in certain mental disorders. The explanation of this rather curious finding, which is very interestingly discussed by Jung, lies partly in the more extensive vocabulary and the greater linguistic fluency of the educated person, but chiefly in the different behaviour of the two classes towards the investigation, the uneducated person treating it more as a sort of examination and devoting to it a more strained attention.

Striking, further, are the variations that depend on the temperamental or character differences. Jung has here clearly defined several distinct types, which, however, are not sharply marked off from one another. They may be grouped under two main headings—objective and subjective respectively.

The *objective* type, which may be regarded as the more normal, *i.e.* the most unlike the definitely pathological, is characterised by the predominance of quite impersonal reactions. The stimulus-word is taken in a literal, material sense, and emotional disturbances or personal points of view play an entirely subordinate part. The reaction may depend on either the objective meaning of the stimulus-word or on its linguistic features.

The *subjective*, or egocentric, type is characterised by the remarkable influence on the reaction of personal memories, often of a strongly emotional kind. There are two main sub-groups, termed the predicate and constellation types respectively, of which the second is the more abnormal. With the first of these the reactions consist of descriptions, attributes, and judgements of the idea denoted by the stimulus-word, and these are of a markedly personal nature. Highly characteristic is the emotional over-accentuation of the judgement, such as in the following examples :—

man—noble.
reading—horrible.
sister—darling.
yellow—hideous.

The explanation of this form of reaction is that the exaggerated outer expression of emotion conceals, by over-

compensation, an inner emotional deficiency. Jung¹ writes: "If a test person evinces a distinct predicate type it may always be inferred that a marked internal emotional deficiency is thereby compensated. Still one cannot reason conversely, namely that an inner emotional deficiency must produce a predicate type. A predicate type can also betray itself through the external behaviour, as, for example, through a particular affectation, enthusiastic exclamations, an embellished behaviour, and the constrained sounding language so often observed in society." This type is commoner in women, and is found in increasing frequency with the advance of age; a notable increase in frequency occurs in women after the fortieth year and in men after the sixtieth, no doubt owing to the poorer emotional life that follows the decrease in sexual vigour at these ages.

Instead of the subject responding in an exaggeratedly emotional way, he may respond in an exaggeratedly intellectual way, simple reactions being replaced by over-drawn elaborate definitions or explanations.

car—a vehicle for transportation.

hat—a protective head-gear.

rain—precipitated moisture.

book—a source of edification.

This type is found either in stupid persons, or in persons who are afraid of being taken as stupid. It is an over-compensation for an inner painful feeling of stupidity, for what Jung calls an "intelligence-complex." Such persons are unnatural and constrained in their conversation, use flowery phrases, high-sounding quotations, complicated words and the like. They wish to appear more than they are, to influence the surrounding company, and to impress others with a show of education and intelligence. In the predicate type in general it is probable that the idea denoted by the stimulus-word appears in an unusually plastic form, particularly its visual component; whichever attribute is seized on is then taken in a directly personal way.

The second sub-group of the subjective type is called the constellation type, because the reactions are markedly "constellated," or determined, by personal elements of a strongly emotional kind. These elements refer to certain precise "com-

¹ Jung. "The Association Method," *Amer. Journ. of Psychol.*, April 1910, P. 237.

plexes,"¹ which have arisen in definite past experiences. Naturally everyone has such complexes, and in one sense all association reactions are constellated—that is, they are determined by mental dispositions which have been built up by past experiences. In the constellation type, however, the reactions are influenced to a preternatural extent by special, individual complexes strongly invested with emotion. Two sub-divisions may further be distinguished, though not sharply. The "simple constellation type" approximates to the predicate, but the determining influences are more specific and not so general. With the "complex-constellation type" the emotional influences differ in two respects: they are stronger, and they are usually unconscious—that is, the person is not aware of their content, which, being too unpleasant to remember, has been forgotten.

The different types are presented in the following classification :—

A. *Objective.*

- I. Reaction principally conditioned *via* the objective meaning of the stimulus-word.
- II. Reaction principally conditioned *via* the linguistic features of the stimulus-word.

B. *Subjective. Egocentric.*

- I. Predicate.
 - a. Personal judgment (*Wertprädikat*). Emotional.
 - b. Definition. Intellectual.
- II. Constellation.
 - a. Simple constellation.
 - b. Complex-constellation.

We have next to consider what may be learned, not from the reactions as a whole, but from the individual reactions taken separately. In doing so it will be necessary to touch on the relation of the association experiment to psycho-analysis, though only the practical aspects of this relation will be referred to. Treatment by means of psycho-analysis² is based on the know-

¹ The term "complex" is of course used in the Bleuler-Jung sense, to indicate the whole group of mental processes relating to a given set of experiences that have become invested with a strong feeling tone, usually of a painful nature.

² See Ernest Jones, "Psycho-analysis in Psychotherapy," *Journ. of Abnormal Psychol.*, June-July 1909; "The Psycho-analytic Method of Treatment," *Journ. of Nerv. and Ment. Dis.*, May 1910.

ledge that psycho-neurotic symptoms are due to the activity of unconscious complexes, are so to speak symbolic replacements of these, and that they permanently cease when the patient becomes aware of the complexes. It has of course long been known that hysterical symptoms, for instance, are psychogenic in origin, and are due to the activity of disaggregated mental processes of high emotional value ; every hysteria is a splitting of the personality, and the symptoms disappear when the disaggregated mental processes, the existence of which was unknown to the patient, are again united to and fused in the main body of personality. The underlying psychological process, however, was quite enigmatical until Freud¹ demonstrated that the reason why the complexes are not present in consciousness is because they have been forcibly displaced by inhibitions. The critical mental processes are of a painful nature, and, being irreconcilable with the personality, have been "repressed" (*verdrängt*). The psycho-analytic method of treatment may from one point of view be said to consist in seeking for buried complexes. When these are elucidated the symptoms disappear, for the pathogenic activity of the complexes depends on their being unconscious, and ceases as soon as they are introduced into consciousness. The association experiment is, in ways that will presently be described, a most serviceable adjunct in this therapeutic exploration.

In carrying out a psycho-analysis one asks the patient to relate *all* the incoming thoughts that occur to him when he concentrates his attention on a given theme and suspends his natural criticism. In this procedure, which is known as "free" or "unforced association," it is essential that the patient makes no selection of the thoughts to be related. Freud assumes that under these circumstances the incoming thoughts must stand in relationship to the point of departure, and in practice one finds that, when the guiding normally exerted during conscious thinking is abrogated, the direction of the thoughts gets taken over by underlying and important mental processes, the existence of which the patient was at first unaware of. As the analysis deepens, more and more significant thoughts are reached, until the mechanism of the symptom in question is laid bare. During the

¹ Freud. "Selected Papers on Hysteria and other Psycho-neuroses. Trans. by A. A. Brill, 1909.

intermediate stages of the procedure all sorts of apparently unimportant thoughts occur, which the patient tends to belittle and depreciate on the plea that they are irrelevant, unessential, immaterial, without significance, and so on. These intermediate thoughts, however, often provide most useful clues to the observer, who has to direct his attention precisely to them, and stand sceptically aloof from the patient's judgments. Freud accepted their importance on purely empirical grounds, feeling justified by the outcome, and one of the most precious results of Jung's fundamental investigations has been the objective demonstration, on experimental grounds, that this assumption was fully correct.

In his deviation experiments (*Ablenkungsversuche*), carried out first with the normal, Jung showed that withdrawal of the subject's attention during the association test, by means of external tasks (addition of numbers, etc.), was followed by definite changes in the nature of the reactions obtained. These changes he describes as a "flattening" of the reactions; the number of superficial associations are greatly increased, especially the clang and motor-speech forms. He was further able to show the reverse of this—namely, that an undue predominance of superficial associations, such as occurs during fatigue, after ingestion of alcohol, in acute mania, etc., is always due to a diminution of conscious attention. Now these are precisely the characteristics of the complex-constellation type of association met with in hysteria, and which correspond with the intermediate thoughts that occur during psycho-analysis. The explanation is plain when one recalls the well-known fact that attention may be attracted from a theme either by an external stimulus, such as a noise outside the room, or by internal processes, such as an absorbing grief or an engrossing train of thought. If mental processes of a highly significant, emotional kind are present, then, whenever no specially interesting train of thought is occupying the mind, as during fatigue, or in various states of distraction, or when conscious direction of the thoughts is entirely suspended, as during psycho-analysis, these mental processes seize the opportunity to take possession of consciousness. If their emotional strength is great, this may occur whenever conscious interest is diminished. We all know how such mental processes may surprise us even in the middle of work, and at times the most distant connection, the lightest note of resemblance, may

serve to elicit them. Every man deeply in love passes through countless such experiences, in which the thoughts that possess him are brought up on the slightest occasion, by a glimpse of a woman's hat, by a fleeting scent, or a dash of colour.

The more consciously deliberate is the selection of the succeeding thought or reaction, the more likely is it to belong to the intrinsic form of association, and the more logical and rational will it appear. On the other hand, the more this deliberate control of thought is diminished, so that the process is carried out automatically, and therefore influenced by emotional complexes, the more superficial is the form of association. This is the reason why the intermediate thoughts that flow in during psycho-analysis, and to which Freud attributes such significance, often proceed by means of illogical, unreasonable connections and superficial associations, such as a play on words and the like.

The influence exerted by a complex on a given association reaction must now be considered more in detail. To appreciate this it has to be remembered that an association experiment is something more than a method for the production of word-couplets. Words are condensed expressions for concrete things, actions, and situations, so that suddenly to ask a person to respond to a word denoting a given situation, marriage, death, etc., is, on a miniature scale, the same as suddenly asking him such questions as, "What do you feel about this? How do you behave in this case?" Now, just as there are in real life actions and subjects about which the person cannot think quickly and surely, on account of embarrassments, painful memories, doubts, and so on, so there are words relating to these subjects towards which he will not be able to react promptly and smoothly. In practice one often finds that a person sticks over certain words in the test, has a difficulty in responding, and shows curious abnormalities in his reaction. These words, which are called "critical test-words," have touched on some feeling-complex, and this interferes with the smoothness of the response. As Jung puts it¹: "The stimulus words are therefore merely a part of reality acting upon us; indeed, a person who shows such disturbances to the stimulus words, is in a certain sense really but imperfectly adapted to reality.

¹ Jung, *op. cit.*, p. 226.

Disease is an imperfect adaptation ; hence in this case we are dealing with something morbid in the psyche,—with something which is either temporarily or persistently pathological." Further than this, the actual content of the reaction word produced under these circumstances is often a symbol of the mental content of the underlying complex, so that it provides a clue to the elucidation of this. This is the more important as the complex is concealed, either purposely or not, by the patient, so that the reaction betrays what he does not wish to reveal. Often, indeed, he is not in a position to directly reveal it, for the complex stands under the ban of various inner resistances and inhibitions which prevent it from being accessible to direct introspection ; in other words it is, in Freud's sense, unconscious.

The disturbances just alluded to, which betray the influence of an underlying complex, may now be enumerated. They do not, of course, all invariably occur together, a matter that depends on various factors, and some are more important than others. In judging of the significance of a given disturbance, one has to take into account many considerations—the extent of it, the presence or absence of other disturbances, the type of patient, and so on. Such a disturbance is termed by Jung a "complex-sign" (*Komplexmerkmal*) ; they will presently be illustrated in detail.

1. *Delay in the Reaction-time*.—This is perhaps the most important complex-sign, and the recognition of its importance constitutes one of Jung's most original contributions to the subject. The average length of the reaction-time (duration between the stimulus-word and the response) varies in different subjects between six- and twelve-fifths of a second. With a given association it varies *slightly* with certain factors, such as the grammatical form of the words, the meaning (concrete or abstract) of the stimulus-word, and the form of association. Any gross delay in the reaction-time, however, certainly any time twice the average, is always due to emotional influences—namely, to the stimulus-word having touched on a feeling-complex. The inhibition is fully analogous with the halting stammer of a person who, on an awkward occasion, is not fully self-possessed, such as a boy making lying excuses to his school-master, or a shy suitor in the throes of a declaration.

2. *Failure to Respond*.—In certain cases the person may be

unable to respond at all, within the conventional limit of thirty seconds, either because his mind "becomes a blank" and no word comes, or because his mind gets over-crowded with confusing thoughts, so that he "does not know what to say." This disturbance is, of course, merely an exaggerated form of the previous one.

3. *Senseless Reaction*.—As was mentioned above, sometimes no connection can be traced between the stimulus and reaction words, the latter in this case usually referring to some object in the immediate surroundings. This is analogous with what happens in conversation when someone "changes the subject" on an awkward point being reached, or guides the theme away from a delicate topic.

4. *Anomalous Superficial Association*.—In the midst of a series of intrinsic associations a strikingly superficial one, clang, etc., may occur. If this happens more than once with similar stimulus-words it is very suspicious of the existence of an underlying complex, which has internally withdrawn the patient's attention, causing the reaction to be purely superficial. This suspicion is strengthened if the reaction-time is unduly long, for, other things being equal, an intrinsic association-reaction generally consumes more time than a superficial one.

5. *Repetition of the Stimulus-word*.—Sometimes, before responding, the patient repeats the stimulus-word. This again has its analogy in everyday life, when a person, on being asked an awkward question that takes him aback, falteringly repeats the question before he is able to formulate an answer.

6. *Repeated Use of the Same Word*.—If the same word keeps recurring throughout the examination, one may suspect that it has an undue significance to the patient.

7. *Perseveration*.—By this is meant that a given association-reaction has so taken hold of the patient's mind that its influence is perceptible in one or more of the succeeding reactions. This may be shown in several ways. For instance, the content of the stimulus or the reaction-word may be repeated, either quite literally or nearly so, in a subsequent reaction. This latter may or may not bear a relation to its own stimulus-word; if it does not, the occurrence is much more significant. This is often combined with the preceding (sixth) complex-sign, in that a word aroused in one association-reaction recurs in several later ones.

Again, one or more reactions may show other complex-signs (delay in the reaction-time, etc.) owing purely to the perseverating influence of the preceding reaction, and even when this itself shows none.

8. *Uncommon Style of Reaction*.—The reaction is totally unexpected, out of the common, and quite inexplicable except on the assumption of some personal constellation which has determined it. Such reactions often occur as sentences, and generally are of the mediate form of association.

9. *Assimilation of the Stimulus-word*.—The stimulus-word is taken in a rare or unusual sense, or is misunderstood in a striking manner, being "assimilated" (to use an expression from the science of phonetics) to some underlying personal complex. An analogy from everyday life is when a person fancies he hears his name being mentioned in a public place when really it is only a name bearing some resemblance to his own.

10. *Defective Reproduction of the Reaction*.—When after the test is finished the patient is asked to recall one by one the reactions he gave to the different stimulus-words, he may show one of the following three errors in reproduction:—He may have quite forgotten the reaction, he may have forgotten even having been given the stimulus-word in question, or he may incorrectly produce the reaction; in the last case the incorrect word is often of service in indicating the nature of the complex.

With the psychoses the discovery of the active complexes is of great value, partly as regards making an accurate diagnosis, but mainly for the purpose of investigating the actual mechanisms at work, so that the morbid picture may become more comprehensible throughout. A considerable number of such analyses based on association tests have been published,¹ and, thanks principally to Jung's studies, much light has been thrown on these obscure questions. In the psycho-neuroses, on the other hand, such investigations are of immense value, not only in these respects, but also in effecting a permanent restoration of the patient to health, for, as was mentioned above, the pathogenic

¹ The only cases of the kind published in English have been recorded by A. A. Brill, "Psychological Factors in Dementia Præcox," *Journ. of Abnormal Psychol.*, Oct.-Nov. 1908; "A Case of Schizophrenia," *Amer. Journ. of Insanity*, July 1909; Jung, "The Psychology of Dementia Præcox," transl. by Brill, 1909; Ernest Jones, "Psycho-analytic Notes on a Case of Hypomania," *Amer. Journ. of Insanity*, Oct. 1909.

activity of the complexes is dependent on their being split off from consciousness, and vanishes when they have been reunited to consciousness.

The following examples are given to illustrate the complex-signs just described, and to indicate how these may point the way to highly significant mental processes that were concerned in the genesis of the affection, and which would have been more difficult to reach by any other means. In each case only a selection is given of the associations taken. It would be beyond the scope of this paper to attempt to relate any analysis of the cases or even the full analysis of the individual association-reactions that show complex-signs, but perhaps enough material will be given to illustrate the significance of the subject.

CASE I.—The patient was a young man suffering from a compulsion-neurosis, which had incapacitated him for two years. One of his main symptoms was an obsession that he was influencing anyone at whom he looked, so that the other person became uncomfortably over-aware of his eyes. During treatment it was found that the roots of the trouble reached back to early childhood, and took origin in forbidden curiosity, which related to acts both of seeing and of touching.

Stimulus-word.	Reaction-time. ¹	Reaction-word.	Reproduction.
coal	9	fire	— (correct)
brother	6	sister	—
mount	17	Venus	—
tea	7	coffee	—
drop	9	water	—
cow	6	horse	—
pin	7	needle	—
blood	37	sack	—
tree	11	leaf	—
snow	7	ice	—
rail	6	fence	—
plate	7	cup	—
touch	25	piano	hear
train	9	seat	—
roof	8	house	—
rub	10	down	—

¹ The reaction-times are all given in fifths of a second.

Stimulus-word.	Reaction-time.	Reaction-word.	Reproduction.
bag	18	sack	0 (failure in reproduction).
watch	17	pocket	—
jump	11	run	—
mouse	10	rat	—
post	5	office	—
blue	12	white	—
pot	24	sugar	sweet
stick	14	candy	—
chair	9	sofa	—
ball	16	paper	0 0 (stimulus - word forgotten).
sheet	9	bed	—
egg	11	hen	—
wood	10	pile	—
note	9	paper	—
fire	8	water	—
sister	10	brother	--
cup	8	saucer	—
warm	9	hot	—
turn	6	over	—
waste	16	labour	paper
dog	7	cat	—
hand	9	foot	—
tongs	11	curling	—
stone	23	glad	—
table	11	cover	—
ride	9	horse	—
paper	22	wall	thin
room	9	chair	—
red	8	white	rose
live	15	light	—
back	13	front	—

The first word to evoke complex-signs was "mount." After finishing the test I asked the patient to tell me what thoughts occurred to him when he concentrated his attention on the word. The following came:—"Mount of Venus; I read recently in a novel about the part of the hand palmists call by this name; it

is also the place where Tannhäuser learnt the art of love; I have often wondered about his experiences; in Latin Mount of Venus would be *mons veneris*; I remember as a boy I used to think this was *mons venerable*; I must have heard it somewhere, but can't recollect where." I did not tell him the anatomical meaning of the term, but later in the treatment it turned out that he had seen it when exploring, at the age of nine, a midwifery book of his uncle's, who was a medical man. The alteration to "venerable" is an instance of the characteristic falsification by which early sexual memories are distorted and robbed of all significance in consciousness.

The next word to note is "blood," which, like "mount," gave an unusual reaction with a lengthened reaction-time. "Sack" is certainly a curious response to "blood," and anyone unaccustomed to psycho-analytic work might be disposed to explain it by attributing it to "chance." However, investigation of mental processes, just as that of physical ones, brings with it an increasing realisation that there are other factors at work besides chance, though recourse to them is less convenient. The suspicion that something lay behind the reaction was strengthened by the re-appearance of the word "sack" as a response to "bag," again with a long reaction-time, and now with a failure in reproduction. The perseverating influence of this last reaction is also to be noticed in the next succeeding one, both in the long reaction-time and perhaps also in the content of the response ("pocket"). Thought of blood brought the associations: precious blood; menstrual blood; woman; sacrilegious; sack; religious ideas. "Sack" brought: *sacré cœur*—a picture of the Sacred Heart (in the Saviour's bosom) that used to hang in his room; a convent named *Sacré Cœur* in a French town where the patient had been a student; then, after a long pause, the following story:—One evening he was on the point of seducing a girl in humble circumstances, who was a pupil at the convent, when he observed her surreptitiously swallowing small pieces of red paper. She refused at first to say what they were, but then confessed they were paper models of the Sacred Heart; the nuns, who had given them to her, had instructed her to swallow them if ever she was in sore temptation, when she would surely be saved. Their prediction was verified, at least on this occasion, for the patient was for the time overcome by remorse. The word "sack" in the

reaction, therefore, succinctly expressed his attitude in a very significant matter. I should add that on further investigation both words were found to be related to still more intimate memories, which accounted for the final letter of the word "sack."

"Touch," with a long reaction-time, a false reproduction, and a rather unusual response ("piano"), reminded him of a lady whose piano-touch he greatly admired, and of a sister, to whose playing he used as a child to listen with delight. Both were very significant persons in his life in ways that cannot here be described, and the origin of his symptoms centred in thoughts relating to them.

"Blue," "red," and three other colours not mentioned in the list given above, all produced the same reaction-word "white," some with complex-signs. This was, as might be surmised, connected with a purity-complex, which referred to a certain woman, and also to the habit of masturbation, against which he had struggled hard. The false reproduction to "red" ("rose") reminded him of a red rose, the symbol of passion; he had recently had a dream in which the presentation of red roses to a woman played a significant part.

The reaction to "pot" showed a long reaction-time, and a false reproduction; a perseverating influence is to be noted on the succeeding response ("candy," with a long reaction-time). The words "sugar," "sweet," "candy" show that the stimulus-word "pot" touched on some complex referring to an enclosed delectable. The following associations to "pot" indicate what this was:—"Keep the pot boiling; warmth; love; sugar bowl; sugared pill; something disguised; the bowl of night; mask; memory of having reacted to the word 'mask' in an association test four months ago with the word 'nut'¹; the proof of the nut is in the kernel; something precious that is hidden; a Biblical quotation, 'There is nothing covered that shall not be revealed, nor hid that shall not be known.'" Subsequent analysis made plain the nature of this hidden secret which was the subject of so much curiosity and desire.

The word "ball," which was misunderstood as "wall" (assimilation), evoked marked complex-signs. The reaction-word ("paper") occurs in two other places, one as a false reproduction, showing its activity in the patient's mind, and to it

¹ This astonishing hypermnesia was quite correct.

as a stimulus-word the reaction-word "wall" follows, also with a significant disturbed reproduction and a delayed reaction-time. One must assume, therefore, that "paper" was related to some feeling-complex, and probably in connection with "wall," as "wall-paper." "Wall-paper" brought the following associations:—Memory of a murder case in Edinburgh where a woman for a murderous purpose obtained arsenic from wall-paper; a fear he had had of lying in bed close to the wall owing to the danger of being poisoned from the arsenic in it; wall-paper is a covering to hide things; "the very walls have ears"; an obsession he had had that he might be spied on or overlooked when bathing; the thought of his present bedroom, which is separated by only a thin wall from a room where two girls sleep: he had jokingly remarked to them that the sound of their talking came through so plainly that he thought the partition must be made of wall-paper; the temptation he had successfully resisted to spy through a small opening in this wall; a similar temptation on a previous occasion to which he had succumbed; early memories of prying into forbidden secrets. The first of these associations, about the danger of wall-paper, related to a phobia which had arisen by displacement (*Verschiebung*); the fear of being overseen through a wall (covering a corresponding repressed wish to be seen) was transferred on to the substance of the wall, hence the apparently absurd fear of wall-paper. The word "paper" itself, however, was connected with still deeper matters. On thinking of it he was reminded of a comic song heard years before, the burden of which was a discussion of the curious places in which newspapers might be found. The only line the patient could recall was from the last verse, where as a climax the singer mentions having found one in a woman's bustle. Then came the memory of his brother's mania as a boy for chewing paper: "He used to nibble my books like a mouse." These apparently trivial associations were only the cover for more significant ones. The last one reminded him of how fond he was of running his fingers up and down his little niece's back in a tickling way, crying "Mousey, mousey!" This was a harmless echo of experiences, till now forgotten, which he had lived through from the age of five to seven with the little girl's mother, his then twelve-year-old sister, when his curiosity led him vainly to explore her dorsal regions as they lay together in bed. The desires then aroused

proved of lasting significance in his later life, and were one of the deepest foundations of his symptoms. In the light of this the first association, about the *newspaper* in a woman's bustle, becomes more intelligible, and a clang association between arsenic and a vulgar word connected the whole complex to the phobia of wall-paper. The complex underlying the "waste-labour" reaction, with its false reproduction of "paper" (waste-paper), referred to the fruitlessness and wastefulness of his masturbatory and other sexual proclivities (*Love's Labour Lost*). So that the innocent stumble in the association-reaction "ball-paper" was not such an indifferent matter as it at first sight looked, and disclosed a large part of the patient's most intimate mental life.

The curious response to "stone," namely "glad," with its accompanying delay in reaction-time, was also strongly constellated. The first thought it brought to his mind in the analysis was "Gladstone," but the patient, who was an American, had never been exceptionally interested in the politician of that name and had no special memories relating to him. His thoughts passed to a certain Gladstone Street, in a small town where he had spent two or three years, and two memories came back to him. A friend of his was engaged to a lady who lived in that street, and used to urge the patient to accompany him on his visits to the house; the visits made the patient very uncomfortable, though he didn't know why. He further recalled that when going alone for an evening ramble he used constantly to find himself being unconsciously directed towards this particular street, though again he couldn't say why. The word "glad" recalled the heroine of that name in the piece, "The Dawn of To-morrow," which was at the time being played in Toronto. The poor heroine Glad, by the exercise of various virtues, brings back to health and happiness a man who was suffering from an incurable nervous disease, as the patient had believed he was. His interest and sympathies were therefore attracted by the story, and he had half-consciously read himself into the part of the hero, an extremely common process which Freud calls "identification."¹ The patient had not actually seen the play, but it reminded him of having seen the leading actress, Miss

¹ An interesting example of this mechanism is recorded in an article, entitled "Remarks on a Case of Auto-psychic Amnesia," published in the *Journal of Abnormal Psychology*, Aug.-Sept. 1909.

Eleanor Robson, whose acting he much admired, in another play, "Merely Mary Ann." In this the hero is attracted by a servant girl, of whom he wishes to take advantage, but is inhibited by moral scruples; the girl leaves him, comes by a fortune, which enables her to become well-educated and refined, and, after overcoming various complications, marries him. The patient, who, like the hero in the play, was an artist, had been involved in a *liaison* with a servant girl, which he had broken off because he did not think she would make him a suitable wife; being very fond of her, however, he had often regretted this, and had many times played with the idea that she might come into a fortune which would raise her as regards both education and social standing. He believed that if he were happily married he would get over his troubles. The word "stone" brought to his mind a line of Tennyson's "Break, break on the cold, grey stones," which led ("break," "cold," "stone") to a complex that had caused him the greatest distress, namely, miserable fears that in consequence of his masturbation habit he was becoming sexually impotent (testicular atrophy, etc.). We can now see why he had felt himself into the two plays, where the hero is cured or made happy by a poor woman, why he couldn't bear to watch his friend's happiness in Gladstone Street, and why nevertheless he used unconsciously to direct his steps in the direction that symbolised his secret wishes (Glad-stone).

The last stimulus-word to strike a complex was "line." He had evidently misunderstood this for "lime," another instance of assimilation. "Limelight," the idea in his mind, was connected with many strong wishes in his mind. When younger he had spent much of his time day-dreaming that he was a great actor, a great musician, a great orator, holding spell-bound an enraptured audience, and even when a boy he had often arranged private theatricals with himself as the sole performer, and his family and friends as audience. As will probably be surmised from the foregoing remarks, this tendency was only a surface manifestation of more secret desires connected with the subject of being gazed at. The word "line," which he had automatically avoided, brought to his mind the first line of a coon song: "Down the line, where stars do shine" (the girl he had lost lived down the line), then "lying down," then "to lie down is used to denote sexual relations, to take it lying down also means to

be a weakling or a coward, to be defeated." The stimulus-word, therefore, had touched on his impotence-complex, and he had over-compensated for the inner feeling of weakness by developing an idea (lime-light) which not merely repudiated this, but in his fancy raised him to a glorious pinnacle of greatness.

As was mentioned above, it is impossible here even imperfectly to exhibit the precise nature and activity of the complexes revealed by the disturbances in the association-reactions; I can only state that they all stood in intimate relation with the various symptoms, and that the elucidation of them was followed by the happiest results to the patient.

CASE II.—The patient was a married woman suffering from a mixed neurosis, principally hysteria; it had confined her to bed for several years. Her chief symptoms were nervous dread, severe pains in all the limbs, gastric disturbances, and various mental inhibitions.

Stimulus-word.	Reaction-time.	Reaction-word.	Reproduction.
cat	8	animal	—
red	9	colour	—
door	14	stoppage	passage
cup	9	to drink out of	—
child	11	small boy	boy
star	11	body in the heavens	heaven
mother	15	parent	—
rail	26	something long	has length to it
bag	12	something to hold things	—
cold	9	atmosphere	—
block	8	square piece of wood	—
rub	20	hard	0
roof	11	black	—
nut	7	shell	—
horse	—	0	—
car	12	riding	—
blood	10	red	—
tool	9	instrument	—
seat	—	0	—
girl	9	child	—
tongs	8	brass	—
blue	14	blue	sky

Stimulus-word.	Reaction-time.	Reaction-word.	Reproduction.
turn	9	twist	—
egg	19	yellow	0
wood	13	yellow	—
stone	10	hard	—
room	17	house	0
grass	12	yellow	green
pink	8	ribbon	—
climb	8	ladder	—
dog	24	black	0
warm	9	fire	—

The associations evidently belong to the constellation type, and show, further, a decidedly predicate quality.

The reaction to "door," with its delayed response ("stoppage") and false reproduction ("passage"), was connected with a "constipation-complex," from which she had suffered since childhood, and this in its turn was related to a repressed complex on the subject of pregnancy. The idea of abdominal distension from constipation was, as is so often the case with neurosis, unconsciously associated with the idea of pregnancy.

"Rail" awoke a directly erotic complex, as may be surmised from the reaction-words, and "rub" the thought of masturbation, about which the patient had suffered intense remorse.

The word "horse," to which she failed to react, reminded her of a horse that had been named after her, and of which she had been devotedly fond. It had suddenly dropped dead the year after her father had died of heart disease. For two years she had had a great fear of dying from heart disease herself, a symptom accentuated by an anxiety-neurosis with marked cardiac palpitation. This memory led to other more important ones about her father, which are too long to repeat here.

"Seat," to which also the patient failed to react, reminded her of the following painful episode:—At the age of fourteen, just after the onset of menstruation, she was induced against her will to play the piano before some strangers; she was unusually bashful and embarrassed. As she sat down awkwardly on the music-stool the seat collapsed, and the spike penetrated her genitalia, inflicting a rather severe injury. In connection with the occurrence she suffered agonies of shame in various ways, on

the medical examinations, on solicitous inquiries from men acquaintances, on subsequent pain under embarrassing circumstances, etc. Since that time she had had a dread of music-stools and insecure seats. The episode was all the more significant to her in that the idea of it became associated with the repressed memory of onanistic acts carried out in childhood on low stools; hence her feeling of shame had a deep source.

"Blue" reminded her of her deep depression ("fit of the blues"), and pessimism about getting better.

"Egg" brought to her mind the great disgust with which she regarded this article of diet, a complex based on strongly repressed sexual ideas; the striking perseverating influence of the reaction-word "yellow" will be noticed.

"Room" made her think of the exceeding distaste she had for the bedroom where she had spent so much of her time, and, indeed, for the whole house. This repugnance towards her home naturally had a deeper significance (an unhappy marriage); with women in general the home is apt to acquire symbolic meaning.

"Dog" reminded her of a black spaniel of which she was as a child passionately fond. Two months later in the treatment a previously forgotten (repressed) memory was recovered, relating to sexual excitations she had experienced at the age of six while riding or jumping up and down on the dog's back.

CASE III.—The patient was a man in middle life, who had suffered since the age of ten from a compulsion-neurosis; for the past four months he had not been able to sleep without taking drugs.

Stimulus-word.	Reaction-time.	Reaction-word.	Reproduction.
wind	7	storm	—
waste	9	spendthrift	—
poker	8	shovel	—
ball	25	bat	0
green	10	white	blue
stone	10	heavy	—
sheet	18	blanket	cover
back	8	front	—
book	8	read	—
note	11	to pay	—
come	14	chew	—

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Stimulus-word.	Reaction-time.	Reaction-word.	Reproduction.
blue	9	white	—
rail	8	fence	—
touch	10	feel	—
live	—	smooth	0 0
girl	9	boy	—
egg	11	to eat	—
talk	27	speech	0 0
carpet	12	blanket	sheet
bag	36	full	0 0
watch	8	chain	—
lace	10	tie	—
blood	23	life	—
nut	10	crack	—
roof	9	cover	—
rub	12	gently	—
horse	8	mare	—
table	13	cover	to eat
water	9	drink	—

The first word to evoke complex-signs was "ball." The associations of this produced by the patient were: The memory of a ball he attended five months ago; this occasion was the last time he had performed certain conjugal duties; he had greatly worried over the idea that he was being impotent. To "dance" he brought the following: He could never learn to dance; he wanted his wife to teach him, but she had refused, being ashamed of his clumsiness. "Bat," the reaction-word to "ball," had reminded him that he had once been what he called an "aggressive" baseball player, but had been forced to give up the game on account of his nervous trouble. The word "ball" was thus linked to the "deficiency-complex" in three different ways.

Every word denoting colour was reacted to be "white," once with a disturbance in reproduction. The associations the patient gave to the word were: Snow; pure; clean; clean collar; the fact that he had of late become very careless about his attire, to the great annoyance of his wife; he had always hated baths, and could not be induced to take more than one or two a year. This last fact related to a very significant complex, dating from childhood.

The stimulus-word "sheet" was followed by an unduly long reaction-time, and the false reproduction "cover" recurs twice later; "sheet" itself occurs again as a false reproduction to "carpet—blanket." "Cover" brought: Sheet over a dead person; the thought of a dead brother; the memory of a cousin whose dead body he had seen at the age of eleven: one eye was open, and it had greatly frightened him; he had always been very terrified of death, and as a boy used to pray to God never to let him die; various obsessions about death and murder, the analysis of which would take up too much space here.

"Come" was responded to by the word "chew," it having evidently been mistaken for gum (assimilation); the patient had struggled to give up the habit of chewing gum, of which he is much ashamed, and of which his wife strongly disapproves.

"Live," a stimulus-word followed by a remarkably long reaction-time, brought: Length of time; long life; righteous life; straight line; crooked line; rope; an obsessive impulse he had had at the age of fourteen to hang the man who was courting his eldest sister; various thoughts about death. "Smooth," the reaction-word, brought: Smooth surface; smooth monument; tombstone; death; life; smooth line of health; the thought that his line of ancestry was smooth, with no history of insanity, a fact that had comforted him in view of his fear of becoming insane.

"Talk" brought: Conversation; consideration (he complained about his wife's lack of consideration and sympathy); talk in a suitable way; gossip; the fact that his wife had the habit, which he much resented, of joining his sister-in-law to calumniate their husbands and his family, to which he was especially attached.

"Bag," the reaction to which also had a very long reaction-time and a failure in reproduction, gave the following associations: Privilege; good opportunity; delight; to suffer like Christ in agony. "Full bag" gave: Years of plenty; prosperity; opportunity; death; "I'll get better" (this referred to "if his wife were to die"); lower regions; hell; depths; death; life; a woman's head; his wife's head; when he sees his wife's head in bed he gets the obsession that he might kill her.

"Blood" gave these associations: "Blood always annoys me, it makes me think I have done something wrong; this morning I noticed a spot of blood on my collar; I remember some months

ago seeing some blood on the water-closet seat; menstrual blood; I was present at my wife's last confinement, when she nearly died of bleeding; I was plagued for months by the foolish idea that the child was not mine."

All these disturbances in the association-reactions plainly pointed, in spite of the patient's denial, to some deep-rooted hostility towards his wife, and gave clues that led to the elucidation of his obsession that she was unfaithful to him, and the fear that he might kill her in his sleep (one of the causes of his sleeplessness).

CASE IV.—The patient, a young woman, had suffered from hystero-epileptiform attacks for six months.

Stimulus-word.	Reaction-time.	Reaction-word.	Reproduction.
coat	7	vest	—
brother	5	sister	—
mount	32	snow	0 0
tea	10	coffee	—
come	7	go	—
blood	9	water	—
bed	8	cloth	—
snow	7	rain	—
nut	41	come	0
touch	13	felt	—
horse	10	cow	—

The stimulus-word "mount" evoked a notably long reaction-time, and reproduction quite failed. The word brought to the patient's mind first the thought of a mountain near her home, then the memory of a girl friend who had been killed there in a tobogganing accident; then, after a long pause, the name of a young man (Robert Mountain), to whom she had been very attached. One day, when nutting together on the mountain (see the reaction to "nut"), he had tried to seduce her, and nearly succeeded (*i.e.* she just escaped a disaster, which, like that of her friend on the same spot, would have been due to losing control). The incident played an important part in the determination of her symptoms.

CASE V.—The patient was a young woman, who for six years had suffered from a mixed neurosis, with among other symptoms a persistent and annoying tic.

Stimulus-word.	Reaction-time.	Reaction-word.	Reproduction.
black	10	dress	—
wind	8	window	—
bare	24	baby	0
turn	9	go	—
cup	6	saucer	—
raise	12	store	—
deep	22	lake	sea
take	11	part	—
rub	9	knee	pain
risk	11	life	—
food	7	eat	—
boy	9	girl	—
pole	9	stick	—
copper	13	toes	—
talk	12	talkative	—
paper	8	write	—
green	6	grass	—
pot	7	flower	—
ball	15	play	playground
stone	10	wall	—
flower	10	plant	—
mother	22	sister	child
ride	9	drive	—
white	11	dress	—
pass	18	future	0
star	9	moon	—
rich	7	poor	—
jump	7	run	—
shoot	—	0	—
cold	11	gold	—
road	13	letter	0
post	11	box	—
nut	9	shell	—
roof	7	house	—
sister	14	child	—
train	10	horse	—
lie	10	down	—
blood	17	water	thin
bed	10	cot	—

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Stimulus-word.	Reaction-time.	Reaction-word.	Reproduction.
lace	12	dress	blouse
tea	8	cup	—
water	26	lake	deep
lamp	13	fire	—
field	10	grass	—
word	8	hard	—
rock	15	deep	0
spend	9	money	0
watch	13	white	pray
cat	8	dog	—

Several significant complexes are concerned in this markedly constellated production. The least important is one dealing with the patient's personal appearance, "a vanity-complex." The stimulus-words "black," "white," and "lace" all evoke "dress" as a reaction-word. The curious association "raise—store" become explicable by the patient remarking that "Ray's" was the name of the shop where she bought her clothes. In the same connection may be mentioned the equally curious association, "copper—toes," which referred to an old threat of her mother's to put copper toes on her boots if she persisted in being such a tomboy and wearing out her things so recklessly. The patient was a good example of the common type of girl who exchange at the time of puberty a careless indifference towards dress for an exaggerated preoccupation with it. "Talk—talkative" referred to another ground of complaint that her mother had in regard to her.

A more important complex was that relating to conception, which was a possible outcome of some recent experiences. The disturbed reactions to the stimulus-words "bare," "mother," and "sister" show the activity of this complex plainly enough; the latter two were explained by the fact that a married sister, with whom the patient was living, had a year-old baby. The word "ball" gave the associations "play—toy—child," and belonged to the same complex.

The stimulus-word "deep," which had evoked a long reaction-time with an erroneous reproduction, brought the following thoughts to the patient's mind: Water; Lake Ontario is the deepest of the Great Lakes; a month ago she spent a morning

on a rocky cliff overlooking the lake ; she was very dejected at the time, and in her despair had all but thrown herself into the water. The response to "deep" ("lake") was again given to the stimulus-word "water" ; it was followed by the erroneous reproduction of "deep," and this word was also the reaction-word to "rock" : both the latter reactions had an unduly long reaction-time, and the second one showed a failure in reproduction. The association "risk—life" further belonged to the same complex. The association "road—letter" indirectly related to it ; the stimulus-word was evidently assimilated as "wrote," and this reminded her of a highly significant letter she had written a fortnight previously, and to which she had as yet got no reply. Another instance of assimilation is seen in the association "pass—future," the stimulus-word being evidently taken as "past." It reminded her of past conduct ("a woman with a past") which she feared might greatly compromise her future. The word "pass," which had been avoided, was also connected with an older complex, as was the word "water," which gave so many complex-signs. For two or three years after puberty she had frequently masturbated, and the impulse to do so had almost always been evoked by experiencing the desire to "pass water."

Finally is to be noted the disturbed reaction to the stimulus-word "blood." As may be guessed from the content of the reaction, this had touched on some family complex, and the nature of this might be inferred from the evidence of exaggerated affect concerning her mother's reprovals (associations to "copper" and "talk"). She had had a number of quarrels with her mother, whom she secretly hated, and was debating with herself whether she should permanently break with her family. The content of the reaction ("blood is thicker than water") indicates the nature of the sentiment that had restrained her in this.

The association-test just related is a good example of how the method may bring one at once to the heart of hidden conflicts in the patient's mind, without a knowledge of which psychotherapeutic treatment is an empty pretence.

CASE VI.—The patient was a man of middle age who had suffered for many years from a mixed neurosis, principally of the compulsion variety. Among many other symptoms were a number of obsessional sensations and hallucinations.

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Stimulus-word.	Reaction-time.	Reaction-word.	Reproduction.
blue	7	sky	—
carpet	8	tack	—
block	12	axe	—
paper	9	wall	—
tongs	8	forge	—
note	8	book	—
climb	16	tree	0
ball	10	ballroom	—
stick	12	sticky	—
field	8	grass	—
black	6	white	—
spend	22	spend	0 0
hat	10	head	—
lace	7	curtain	—
copper	8	gold	—
jump	6	run	—
watch	13	black	—
talk	9	converse	—
back	19	foot	—
rich	10	poor	—
lamp	6	post	—
shoot	9	shot	—
green	7	blue	—
door	18	jam	0
run	9	walk	—
wood	13	tree	0
father	8	mother	—
ride	8	horse	—
water	23	pond	0 0
turn	10	burn	—
dog	8	cat	—

Several complexes were here revealed by consideration of the disturbed reactions. The stimulus-word "back," which produced the unusual response "foot" after an undue delay, brought up the following thoughts: "Foot; foot-and-mouth-disease; I don't know anything about this except that it is a disease of cattle, and that it is very disgusting; cows; milk; cream; semen; masturbation." The patient had masturbated for

many years, usually when lying on his *back*, hence the disturbed reaction to this word. The word "water," the reaction to which showed several complex-signs, brought: Water; urine; penis; water-closet (where he had often masturbated); sewage; pond; mud; slime; semen. The stimulus-words "spend" and "stick" had also touched the same complex. Stick had also connected with the memory of several painful thrashings he had had as a boy, and with experiences which revealed a strongly marked sadistic trend. This sadistic complex was touched by two other stimulus-words, "block," which brought up thoughts of the headsman, execution, torture, etc., and "door," which was associated to "frame": blood on the lintel; Passover; sacrifice; suffering.

The stimulus-words "climb" and "wood" were both responded to with "tree," there being in both cases a delay in the reaction time, and a failure in reproduction. All the patient could recall at the time was the fact that he had always been fond of climbing trees, and could still do so with enjoyment. Later in the analysis it came out that some of his earliest sexual excitations were brought about by the gripping movements of climbing, and further, that he had had the habit as a young boy of defæcating from the branches of trees so as to enjoy the pleasure of witnessing the fall of the dejecta.

The association-reaction "watch-black" referred to a boyish escapade, when, to escape his father's tyranny, he had run away from home with the intention of joining the famous Black Watch regiment, by whose exploits he had been greatly fired.

In conclusion, I would state that my experience has fully confirmed that of Jung and his pupils as to the great practical value of the word-association method in enabling one objectively to determine the nature of the mental conflicts in which psycho-neurotic symptoms take their origin.

THE MESENCEPHALIC FIFTH ROOT, THE DORSAL VAGO - GLOSSO - PHARYNGEAL NUCLEUS, AND THE QUESTION OF AN ENDO-NEURAL AFFERENT GANGLIONIC SYSTEM.

By LEONARD J. KIDD, M.D.

PART II.

The Dorsal Vago-glosso-pharyngeal Nucleus.

THE functional nature of this nucleus has been much debated. Thus Marinesco (16) states that it has been held to be sensory by Kölliker, Cajal, and van Gehuchten; Eisenlohr held it was the centre of the superior laryngeal; Dees that it is a vasomotor centre; Forel, a motor centre; and Holm, a respiratory centre. The latter worker found that it is not developed till the sixth month.

I hope to show that (1) it is not a sensory reception-nucleus in man; (2) that it is on *a priori* grounds highly improbable that it is motor; (3) that it gives rise in man wholly to centrifugal descending fibres; and (4) that it is probably an afferent endo-neural ganglion whose exact peripheral distribution has not yet been experimentally determined.

1. *Character of its Cells.*

These are much more like those we associate with afferent than with efferent structures. Cunningham¹ describes them as spindle-shaped and very similar to those found in the dorsal horn of the spinal cord. Obersteiner and Hill² find them small and mostly spindle-shaped; they also find roundish darkly-pigmented cells on its periphery, especially in the more dorsal parts; they suggest that these may belong to the vagus nerve. A. Hill³ compares the cells of the locus cœruleus, those of Clarke's column—thoracic and sacral—and those of the dorsal vagus nucleus. He says it is impossible to mistake the cells of these three groups for groups of motor cells for skeletal

¹ "Text-book of Anatomy," Edinburgh, 1902, p. 478.

² "Anatomy of the Central Nervous Organs," 2nd Ed., London, 1900.

³ *Loc. cit.*, p. 280.

structures : all these groups show pigmentation of their cells. I know of only one observer who describes any multipolar cells in the dorsal nucleus vagi, viz., Aldren Turner (3) (1894). He found in osmium silver preparations many multipolar cells, but smaller than those of the hypoglossal nucleus ; but he found that most of the cells of the dorsal nucleus were spindle-shaped. The fibres that rise in the dorsal nucleus are said to be distributed to (1) the œsophagus ; (2) gastro-intestinal canal ; and (3) lower part of larynx.

2. *Topography and Development.*

Its extent is that of the medulla ; I think its description as comprising the eleventh nerve is correct, but perhaps in one sense unnecessary ; for we know by the careful embryological study of Streeter¹ that the medullary accessory is developmentally part of the vagus. Obersteiner and Hill mention that Staderini and Pieracini think that they can prove the existence of a sensory portion of the spinal accessory nerve.

The dorsal nucleus is situated in part in the trigonum vagi, which His found was developed in the alar lamina of the rhombencephalon of the human embryo. This, if confirmed, would for all practical purposes prove that this portion—the middle third—of the dorsal nucleus is in no sense motor, because motor structures are never, so far as we know, developed in the alar lamina of the embryonic brain or cord.

Streeter (13), 1903, finds that the ala cinerea (trigonum vagi) represents the middle third of the dorsal nucleus ; he states that the intra-ventricular portion of its caudal one-third is covered by the area postrema of Retzius. He gives the length of the nucleus as 13·5 mm., and its average width as 2 mm. ; van Gehuchten gives the length as only 7 mm. He stated in 1900² that his recent studies by the Nissl and Golgi methods show that it belongs to the tenth nerve solely, and yet he figures and labels a dorsal ninth nucleus.

But recently Wilson (14), 1906, has, after a very careful study, reached the conclusion that the ala cinerea does not belong

¹ *Amer. Journ. of Anat.*, Vol. iv., No. 1, Dec. 1904, "Development of the Cranial and Spinal Nerves in the Occipital Region of the Human Embryo."

² "Système Nerveux," 3rd Ed., 1900, Vol. ii., p. 66. (I have not had access to his later edition (1906).)

to the alar lamina of the rhombencephalon. He has satisfied himself of this by a study of Von Kupffer's work on lower vertebrates, by study of His' writings and embryos, and by his own investigations. He holds that only the area postrema of Retzius is in the dorsal zone of the fourth ventricle. It is of great interest that he finds that this area of Retzius, which is known to be very vascular, contains also nerve cells of moderate size; they vary considerably in abundance, but he has never found them entirely absent. Of these cells he writes thus: "Perhaps the more prevalent form is flask-shaped or pyriform, often with one large polar dendrite, and an axon arising from the opposite pole. Nevertheless, both spheroidal and more or less triangular forms also occur." He describes this collection of cells in the area postrema of Retzius as a "Nucleus Postremus"; he had not ascertained its connections. It seems to me that its afferent nature is strongly suggested by the character of its cells, and also by the fact that it is developed in the alar lamina.

Wilson points out that the existence of his nucleus postremus was probably recognized by Henle and by van Gehuchten, and was figured by the latter without comment and without description of its cells. Wilson attaches immense importance to that intermediate zone of the embryonic cord, which His called the "Schaltstück." Apparently His did not consider it as of fundamental morphological importance. Indeed, Wilson "doubts that His credited it to either the ventral or the dorsal zone." He also thinks "it would be straining His' description to include it in the dorsal zone." He also refers to Minot's interpretation of His' Schaltstück; thus he mentions that "Minot thought that His' statement that from the Schaltstück the cervix cornu posterioris and Clarke's column takes origin, together with the chief mass of the processus reticularis, whilst its border-zone yields the myelospongium for the hinder part of the lateral white column," meant that "only part of the posterior horn of the adult is developed from the dorsal zone."

Wilson shows that in the part of the bulb where the dorsal white columns are approaching their termination—often spoken of as "diverging"—the central canal tends to manifest, even in the adult, the embryonal type of organisation such as is met with markedly in the embryonic cord. He lays great stress on Von Kupffer's work in lower vertebrates, and follows him in

describing three longitudinal zones instead of the usual two. He calls these (with v. Kupffer) (1) medial (Wilson prefers ventral), (2) lateral, (3) dorsal. The two sulci he calls (1) dorso-lateral, (2) ventro-lateral. He finds these three zones represented to some extent in the diencephalon and mesencephalon; he finds too that the characters of the lumen of the central canal of the bulb near its entry into the fourth ventricle are prone to variation.

One may sum up the situation thus: Even if Wilson be right that "the sole derivation of the alar lamina of His in the calamus region is the area postrema of Retzius, and that the ala cinerea and its caudal continuation form an intermediate or lateral zone of the medullary parietes lying between dorso- and ventro-lateral sulci, and that it probably corresponds to the Schaltstück of His," we still want to know what is the origin of the anterior third of the vago-glosso-pharyngeal dorsal nucleus, which Streeter finds is anterior to the ala cinerea. It is certainly true, as Wilson says, that his own fig. 21, on p. 241, bears out his own interpretation of these three longitudinal zones.

The meaning of the Schaltstück is still uncertain: it seems likely that it may give rise to part of the dorsal horn and part of Clarke's column (this consists of a large-celled part and also a small-celled part), and possibly also to some of the middle cells of the cord, and to the intermedio-lateral cell column and its morphological continuations in the brain, such as possibly the nucleus intercalatus of Staderini, and the nucleus incertus. These are well seen in Streeter's figures (13), and he has suggested that they may be central sympathetic nuclei. He finds in the nucleus incertus (which lies over the facialis and abducens area) scattered groups of medium-sized multipolar nerve cells. It seems to me possible that the nucleus funiculi teretis is homologous with the medial sympathetic nucleus of Jacobsohn (lumbar 4 to coccygeal), and that the central nuclei of the autonomic system are represented by two cell-columns—(1) lateral, (2) medial—just as the nuclei of striped muscles are in the ventral zone of the brain and cord.

Everyone will agree, I think, with Wilson that further study of the cell-groups of the fourth ventricle region, both by the comparative embryologist and the comparative anatomist, are greatly needed, and will clear up much that is at present obscure in this difficult region.

Two of Streeter's Weigert preparations (made by Weigert himself) show well the neuroglial septa—Weigert's "Kielstreifen," *i.e.* tracks left by embryonal sulci—between the various cell-

groups of the floor of the fourth ventricle. It is interesting to note here that Wilson finds (conclusion 17) that the "prominence of the area postrema . . . is pretty sharply marked off from the surrounding tissue by a neuroglia septum," etc., etc.

The fact that the dorsal nucleus is always either dorsal or dorso-lateral to the hypoglossal nucleus at once suggests its resemblance to Clarke's column or the posterior horn, but since it is everywhere close up to the floor of the ventricle, we can see how neural-crest cells included in the process of closure of the embryonic medullary canal would naturally have taken up this position, *i.e.* if it be ultimately proved that the dorsal nucleus is an endo-neural afferent ganglion. I admit that Wilson's work is against the view, and it seems more likely that it is homologous with either part of the dorsal horn or part of Clarke's column, but I hope to show presently that this is unlikely to be the case. One fact stands out prominently, *viz.*, that its cell-characters strongly suggest its afferent nature.

3. *Experimental Evidence.*

1. In 1892 Forel (15)¹ "discovered that, when the glosso-pharyngeal nerve of the newly-born guinea-pig was divided, the cells of the so-called sensory nucleus atrophy and disappear completely. On the strength of Gudden's law he argues that the cells would not have disappeared had they not been the cells of origin of the fibres, and, therefore, that they must be motor or efferent and not sensory in their nature." Clearly this conclusion was based on the assumption—not yet proved—that all the afferent fibres of the ninth nerve rise in one or other of its two peripheral ganglia. Forel really proved the centrifugal nature of the fibres. His experimental work is directly opposed to van Gehuchten's teaching that the dorsal vago-glosso-pharyngeal nucleus belongs entirely to the tenth nerve.

2. In 1894 Aldren Turner (3) divided the glosso-pharyngeal nerve roots of a monkey as they issue from the brain; this was followed by degeneration of many of the intra-medullary root-fibres; these could be traced both into the fasciculus solitarius and to a less extent into the dorsal ninth nucleus. This isolated experiment seems to suggest that in the monkey the dorsal ninth

¹ I have not had access to his Paper: the passage in inverted commas is from Bruce's Paper (8).

nucleus may be of twofold nature, viz., (1) partly an afferent reception-nucleus, and (2) one whose fibres are centrifugal (in my opinion an afferent ganglion). I know of no similar experimental findings, however.

3. In 1897 Marinesco (16) experimented on cats, dogs, and rabbits, and concluded that Holm's teaching that the dorsal nucleus is a respiratory centre is erroneous. Marinesco cut the vagus¹ in cats and dogs; he found a reaction at a distance in the cells of the dorsal tenth nucleus in six days after section; it was complete in fifteen days. He concluded that the nucleus is motor: he then asks what is its nature? He points out that its cells do not resemble those of the nucleus ambiguus or the hypoglossal nucleus. He suggests that it innervates unstriated muscles supplied by the vagus; he gives no reason for his suggestion; and I believe that it was really Gaskell who first threw out this suggestion. Marinesco makes one strange omission: he does not state whether all the cells of the dorsal vago-glosso-pharyngeal nucleus showed changes. This should have occurred if the nucleus belongs entirely to the tenth nerve, as van Gehuchten held in 1900.

I hope to show presently that the Gaskell-Marinesco guess was an unhappy one.

To sum up the experimental evidence, then, we find that (1) Forel proved that in the guinea-pig the ninth nerve contains descending fibres that rise in the dorsal ninth nucleus; (2) Turner showed that in a monkey the ninth nerve contains some descending fibres; and (3) Marinesco proved that in cats and dogs the dorsal tenth nucleus gives origin to fibres that pass down the vagus nerve.

No one seems to have attempted to determine experimentally the exact peripheral distribution of the centrifugal fibres that rise in the dorsal vago-glosso-pharyngeal nucleus.

4. Clinico-Pathological Evidence.

1. In 1898 Bruce (8) published the case to which I have referred in Part I. The tumour had destroyed the ninth nerve within the jugular foramen, but had spared the tenth. Examination by Marchi method. Bruce found that while the whole of

¹ By a misprint Bruce says the glosso-pharyngeal (p. 384). (See Marinesco (16), near top of p. 169.)

the ninth fibres which enter the upper part of the fasciculus solitarius were degenerated, not a single degenerated fibre could be traced towards the dorsal nucleus or to the nucleus ambiguus. His figures show this clearly. He concluded that the dorsal nucleus and the roots from it are motor, as suggested by Forel and by Marinesco.

2. In the same year Spiller and Dercum¹ had a case of amyotrophic lateral sclerosis with bulbar symptoms: on autopsy they found degenerative changes in the dorsal vago-glosso-pharyngeal nucleus. Spiller (17), in 1903, laid stress on this point as tending to show that the dorsal nucleus is motor in function; he based this opinion on the widely accepted teaching that this disease is one of motor structures. But we have recently learnt by the careful complete microscopical study of ten cases of this disease by Gordon Holmes² that the disease affects numerous afferent structures, especially both spino-cerebellar tracts (which have often been found involved). It so happens that the dorsal vago-glosso-pharyngeal nucleus was intact in all the ten cases of Holmes'. But we are now forced to conclude that in this disease the escape (common) or affection (rare) of the dorsal nucleus throws no light whatever on its function.

3. In 1903 Spiller (17) published a most valuable case of unilateral degeneration of the ninth and tenth nerves from a lesion near the medulla due to a fracture of the base of the skull. M., 54, fell 8 feet on vertex on April 8, 1902; unconscious twenty minutes; got up, walked; only physical signs found then were (1) inability to swallow, (2) tongue was said to deviate to left.

Clinical Examination by Spiller four weeks after Accident.

Tongue protruded straight; no atrophy or tremor; slightly deficient movement of soft palate on left; complete palsy of left side of larynx. Patient was fed by rectum; progressive weakness; on May 23 stomach tube was passed with great difficulty; it seemed to lodge in a pocket of the œsophagus at cardiac end of stomach; the tube was passed only three times; "the pocket

¹ *Journal of Nervous and Mental Diseases*, Vol. xxv., 1898, p. 677 (full report in Vol. xxvi., Feb. 1899, pp. 84-106).

² *Rev. of Neurol. and Psychiat.*, Vol. vii., Nov. 1909, pp. 693-725, 6 figs., "The Pathology of Amyotrophic Lateral Sclerosis."

was probably the result of paralysis of the left side of the œsophagus." Death next day, barely seven weeks after accident. Spiller had diagnosed a fracture of base of skull, possibly with hæmorrhage at base of brain. Autopsy showed a fracture of left side of the occipital bone into the foramen magnum: a spicule of bone projected upwards at least a quarter of an inch. "The bony projection undoubtedly pressed upon adjacent nerves coming off from the medulla." There was cerebellar hæmorrhage, and many other points of interest were found.¹

Spiller found that the left ninth and tenth roots were intensely degenerated, also the left recurrent laryngeal nerve, and portions of the left tenth below cranium; the descending root of left ninth and tenth intensely degenerated, by Marchi method; fibres from the ninth and tenth to the nucleus ambiguus, others across the raphé to the right fillet, and some to the dorsal vago-glossopharyngeal nucleus. "The nuclei in most of the cells of the posterior nucleus of the left ninth were eccentric, whereas in the right they were central, with few exceptions." Similar changes were found in the cells of the nucleus ambiguus. Spiller sums up the changes in the dorsal nucleus thus: "In my case the cells of the posterior nucleus on the left side were swollen, and their nuclei eccentric. As such alterations as these would not be likely to occur if the nuclei were sensory, because then these cells would not be an integral part of the peripheral fibres, it seems more probable that the posterior nucleus is motor."

Here, again, we see that this conclusion was inevitable, because even so recently as 1903 it was believed that all the afferent ninth and tenth nerve fibres rise in their peripheral ganglia. Spiller's case proves directly and positively, as Bruce's did indirectly but just as certainly, that the dorsal nucleus gives origin to descending centrifugal fibres alone in man. Spiller's paper contains a very useful summary of the effects of unilateral and bilateral lesions of the vagus in man; he quotes the work of Demme and Mackenzie, Stromeyer, and others; also the experiments of Crile on unilateral vagotomy, which I will presently refer to in detail.

4. In 1904 Hudovernig (18), "in a case of carcinoma of

¹ Given in the Abstract in *Rev. Neurol. and Psychiat.*, Vol. i., June 1903, p. 402.

² I am indebted to Weisenburg's Paper (19) for my knowledge of the findings of Hudovernig: the passage in inverted commas is from Weisenburg, p. 387.

the œsophagus, found changes in some of the cells of the nucleus ambiguus and of the dorsal vagus nucleus. Most of the alterations, which were studied by Nissl's method, were in the dorsal vagus nucleus. He concludes that as the œsophagus is innervated by the vagus, especially by its sensory fibres, these changes illustrate the so-called reaction at a distance. He quotes Parhon, who found changes in the twelfth nucleus due to carcinoma of the tongue." Weisenburg (19) considers that "the assumption of Parhon and of Hudovernig is probably not correct, inasmuch as these alterations were found in a very few cells." It seems to me, in connection with Hudovernig's case, that the fact that the retrograde changes were limited to some of the cells of the dorsal tenth nucleus is exactly what we should expect from a lesion of the œsophagus; for we know that it is only one of at least three peripheral areas to which the dorsal tenth nucleus sends—or is believed to send—its peripheral processes. In Parhon's case, if the carcinoma of the tongue involved only some of the efferent fibres coming from the twelfth nucleus, then naturally only some of its cells would have undergone retrograde changes.

Indeed, with reference to Hudovernig's case, I go so far as to suggest that it virtually proves that in man the dorsal tenth nucleus is not a central sympathetic nucleus, *i.e.* that the Gaskell-Marinesco guess was an unhappy one. For, if it were, then it would send its pre-ganglionic nerve fibres for the unstriped muscle fibres of the œsophagus to end round the cells of a sympathetic ganglion. If Gaskell be right that the vagus trunk ganglion is a sympathetic ganglion (albeit it is known that its cells are not of the type known to occur in sympathetic ganglia), these pre-ganglionic fibres might end round its cells: in this event a lesion of the œsophagus which caused retrograde cell changes would do so in the trunk ganglion of the vagus and not in the dorsal tenth nucleus.

But, if the trunk ganglion of the tenth nerve be not a sympathetic ganglion, we know that pre-ganglionic fibres destined for the œsophagus would have to end round the cells of the great splanchnic ganglion. Even then an œsophageal lesion which caused retrograde cell changes would produce these in the cells of that sympathetic ganglion and not in the dorsal tenth nucleus. It logically follows, therefore, that, since in Hudovernig's case these changes did occur in the cells of the dorsal tenth nucleus,

we have definite proof that the fibres to which it gives origin pass down the vagus and through the œsophageal plexus to the œsophagus without any intermediate cell-connection. The conclusion seems to me inevitable that the dorsal tenth nucleus is an endo-neural afferent ganglion, in so far, at any rate, as the œsophagus is concerned.

5. In 1905 Weisenburg (19), writing on that interesting group of cases of terminal bulbar paralysis, possibly of toxæmic origin, occurring in cases of carcinoma of parts other than the nervous system, mentions a case of his own, of a woman of 59, who had had a carcinoma of the left breast thirteen years previously. Five months before her death she had difficulty of swallowing, voice hoarse, then difficulty of articulation, progressing till she could eventually speak only in a whisper, fatigue in speaking, no dribbling of saliva. On autopsy Weisenburg found some of the cells of the dorsal vago-glosso-pharyngeal nucleus altered, viz., the nuclei were peripherally displaced; disintegration of chromophilic elements; no swelling of cells. These changes occurred both in the dorsal and the ventral parts of the nucleus; there were also changes in some of the cells of the nucleus ambiguus. Weisenburg discusses the views of Saenger, Oppenheim, Bettelheim, and Nonne as to the explanation of the various cerebral symptoms in this rather uncommon group of cases. I think it best to say nothing further on Weisenburg's case, because its correct interpretation is open to doubt. We really know virtually nothing about the mechanism by which bulbar or other changes are brought about in these cases.

This much I may say, however, that I think it is possible that the dorsal nucleus may give muscle-afferent fibres to, among others, the pharyngeal constrictors, palate muscles, and to the striped muscle fibres of the œsophagus and larynx; it may also send afferent fibres to the glands of the œsophagus and stomach. But all these points need experimental testing.

I think it is possible that the dorsal tenth nucleus may give origin to a few muscle-afferent fibres to the sterno-mastoid and trapezius: it is in this way only that the dorsal nucleus could belong to the spinal accessory nerve, I think. There are reasons, which I reserve for a future paper, which suggest that the muscle afferents of the sterno-mastoid must be both crossed and direct.

In any retrograde degeneration experiments, therefore, both sides of the raphé must be examined for the presence of cell changes in the dorsal tenth nuclei. Doubtless the major supply of the sterno-mastoid and trapezius afferents comes from the second and third cervical dorsal root ganglia.

The subject of experimental vagotomy is of great importance in connection with experiments bearing on the function of the dorsal nucleus.

Crile (20) found that dogs bear unilateral vagotomy remarkably well: he narrates nine such experiments: he mentions that Fontana found that of twelve rabbits three died, and that Longet found that dogs usually survive. Other experiments were done by Arthaud and Butte, Langendorff, Cruenhogan, Widmer, Shevla, and von Anrep.

It seems that section of the ninth or tenth nerve roots centrad of their root ganglia is likely to be difficult, if not impossible: probably, therefore, experimenters who wish to throw light on the nature of the dorsal nucleus will have to rely mainly on the axonal reaction method. The ninth is likely to be easier to tackle than the tenth. Division of its branches should be followed in from six to ten days by microscopical examination of both its peripheral ganglia and of the dorsal nucleus also. I think it is probable that the tensor tympani and tensor palati get their efferent fibres from the nucleus ambiguus and their afferent fibres from either the dorsal ninth nucleus or the petrosal ganglion of the ninth: in both cases the path would be by the petrosal ganglion, its tympanic branch, the tympanic plexus, the small superficial petrosal nerve, and thence through the otic ganglion to its peripheral branch to the two muscles. It will be remembered that Morriston Davies (21) found no evidence in favour of the view that they are supplied by the motor fifth nerve. In my opinion the otic ganglion is much more closely related to the ninth nerve than to the fifth. It is to be noted that Dixon (22), who has made the only embryological study in existence on the development of the branches of the fifth nerve in man (and the rat also), found no evidence that the accessory fifth sympathetic ganglia (otic, etc.) were developed from the Gasserian ganglion, as is usually held to be the case.

It is to be remembered that in that most interesting chapter in neurology, the cranial nerves, we do not yet know the gangli-

onic origin of the muscle afferents of a single one even ; and there are only four cranial nerves in which the existence of muscle-afferent fibres has been demonstrated, viz., the third, fourth, sixth, and twelfth. It is almost certain, but not yet experimentally proved, that the motor fifth and the seventh also contain them. It seems to have been widely forgotten that the existence of afferent algetic fibres in the hypoglossal nerve was physiologically proved in the frog sixty years ago by the elder Waller,¹ of immortal memory. In 1894 Sherrington² found that the twelfth nerve of the cat and monkey was one of several nerves, which he enumerates, that possess abundance of fibres from sensory ganglia. I have previously (23) suggested that the muscle afferents of the tongue rise in the cells of the second cervical dorsal root ganglion. I now think that a few may rise in the dorsal vago-glosso-pharyngeal nucleus. I have been led to this belief by a study of the notable paper of Edgeworth (24), who, by his combined study of the development of the tongue muscles in the common toad and of the histological study of the size of the cranial nerve fibres in dogs, concluded that the tongue muscles are of branchial origin. On p. 138 he "infers that the intrinsic tongue muscles of the dog are developed from the mandibular, hyoid, and first branchial (glosso-pharyngeus) segments, and the extrinsic from the mandibular and hyoid." Now the only path in man by which muscle afferents could pass from the dorsal vago-glosso-pharyngeal nucleus to the hypoglossal nerve is by the tenth nerve roots, through its trunk ganglion, which sends a branch that communicates with the hypoglossal nerve. In any experiments on the hypoglossal muscle afferents this point ought to be attended to. One point is of interest, viz., that the intrinsic tongue muscles, which are said to possess no muscle spindles, are just as sensitive to squeezing as the extrinsic : thus on the dorsum, near the tip, where the extrinsic do not extend, the peculiar, burning, persistent pain which I drew attention to (23) is fully as well felt as it is further back. Immediately after my paper appeared, Grasset brought out his work on deep sensibility in tabes, and mentioned that a few years ago two French observers had noted loss of this peculiar form of lingual sensibility in more than half of the tabetics they

¹ *Phil. Trans. Roy. Soc. Lond.*, Vol. cxl., 1850, p. 427.

² *Journ. of Physiol.*, Vol. xvii., 1894, p. 255.

had specially examined—a point that I drew special attention to as needing testing. I had overlooked their paper.

Since we do not yet know whether the cells of Wilson's nucleus postremus send their peripheral processes into the roots of the ninth and tenth nerves, it is certainly desirable that retrograde degeneration experiments on these roots should be followed up by microscopical examination of the cells of Wilson's nucleus.

Another point: if the dorsal nucleus be an afferent ganglion, do its fibres regenerate subsequently to section of the ninth and tenth roots centrad of their ganglia, *i.e.* if this operation can be performed?

In concluding this part I may draw attention to the fact that my interpretation of the nature of the dorsal nucleus is not the one which is favoured by Johnston. A reference to his valuable work¹ will show that he follows Onuf and Collins, and reproduces one of their figures. Johnston apparently accepts the Gaskell-Marinesco hypothesis. Thus, in the figure, he describes the dorsal nucleus as the "nucleus for visceral or vegetative (sympathetic) efferent fibres."

PART III.

The Question of an Endo-Neural Afferent Ganglionic System.

Pending experimental confirmation, one can hardly doubt that such a system does exist. The evidence I have brought forward here strongly suggests this conclusion. It seems likely that the cells of the tectum and locus cœruleus give muscle afferents to the third, fourth, motor fifth, and sixth nerves; further, that the dorsal ninth and tenth nucleus does the same to the œsophagus, stomach, larynx, and probably palate, pharynx, and possibly tongue muscles. The question of the skin of the trigeminus area, as also of the periosteum and other deep structures, is uncertain. One thing is certain, *viz.*, that if the dorsal ninth and tenth nucleus be a ganglion, it must innervate a much wider area than the insignificant cutaneous area of the tenth nerve.

There remains for consideration the seventh and the

¹ "The Nervous System of Vertebrates," London, 1907, p. 201.

eleventh nerves: I have suggested that the latter may send muscle afferents to the sterno-mastoid and trapezius. Do any of the cells of the locus cœruleus send their peripheral processes into the motor or the afferent portion of the seventh nerve? On this point I feel some doubt: but the whole subject of this nerve so badly needs experimental re-investigation in several directions, that, for want of space, I must omit any further reference here to this most interesting question. But I may just mention that quite recently C. K. Mills has arrived at a different conclusion from that of Ivy and Johnson (9); thus he finds that complete section of the fifth afferent root always abolishes deep sensibility in the trigeminal area of distribution; but it is to be noted that he does not state whether the muscle sensibility of the temporal, masseter or mylohyoid is lost or not.

It is possible that the cells of the tectum may send fibres (of common sensibility) to the lachrymal gland; and those of the locus cœruleus to the parotid and submaxillary glands. Recently, Solomowicz (25) found, in two dogs, 21 and 26 respectively after extirpation of the submaxillary gland, histological changes in cells in the region of Deiter's nucleus, chiefly the homolateral one. Analogy would suggest that the centre of the lachrymal gland probably exists somewhere just in front of the centre of the submaxillary gland and that of the parotid gland just behind it. It is held that the parotid gets its secretory fibres *via* the ninth nerve by the tympanic, small superficial petrosal, and otic route.

Experimental extirpation of the lachrymal and parotid glands might give us some much-needed information as to the centres for their secretory fibres.

A few years ago Parsons (26) brought forward some evidence in favour of the view that the lachrymal gland gets its secretory fibres *via* the great petrosal and vidian route from or through the seventh nerve. It seems to me that the fact that the lachrymal gland has a double innervation, its primitive one being from the fifth, and further that the salivary glands have a nerve supply from three or four sources, suggests that the secretory fibres are probably always conveyed in different nerve trunks from the fibres of common sensibility.

There is only one other question concerning the endo-neural

afferent system that needs brief consideration, viz., Does it extend into any parts of the spinal cord? Obviously, before we could admit this, we should have to prove that intra-spinal cells exist whose peripheral processes pass direct to their destination without any intermediate cell connection. The evidence is strongly in favour of the view that, if any such cells exist in higher mammals, their peripheral processes do not pass *via* the dorsal roots.¹ It can hardly be said, however, that the proof is nearly as clear in the case of the ventral roots. Possibly some of the smaller cells of Clarke's column or the middle cells of the cord may ultimately be proved to be really endo-neural afferent ganglionic cells. In this way—and in this way alone, as far as I can see—would it be possible to look on part of the cells of Clarke's column as an afferent splanchnic ganglionic centre, and homologous with the dorsal vago-glosso-pharyngeal nucleus. The fact that there are still such a large number of cells in the mammalian spinal cord, concerning whose connections and functions we are still so much in the dark, should make us cautious.

Finally, a word about the term endo-neural, which I have adopted: we cannot say intra-medullary, because we already use it in a different sense. Then endo-medullary is objectionable, because it is embryologically desirable that we should still retain the term medullary as opposed to ganglionic. We have no Greek word to signify neural tube: therefore endo-neural seems to be as near perfection as any other term that could be offered. If necessary, we could speak of the ganglionic system as twofold—(1) exo-neural, (2) endo-neural. I think it not improbable that experiment will before long suggest that we should in future speak of the dorsal vago-glosso-pharyngeal ganglion instead of "nucleus."

It seemed to me fitting that I should offer this necessarily somewhat speculative paper to the editor of this *Review*, whose admirably studied case has been such a material help to me in arriving at the conclusions which I have here offered.

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Abstracts

ANATOMY.

THE HYPOPHYSIS. (*Die Hypophysis.*) MÜNZER, *Berl. klin.* (602) *Wchnschr.*, Feb. 21 and 28, 1910, Sn. 341 and 392.

THIS paper gives a general review of all the literature of recent years bearing upon this subject. It is only possible here to recapitulate some of the more important facts, while for more extended information the copious bibliography given may well be consulted.

The hypophysis consists of an anterior glandular and posterior nervous lobe. The glandular portions are enveloped in loose connective tissue and contain chromophile and chromophobe cells. The posterior lobe consists of connective tissue mingled with neuroglia and a fine network of nerve fibres. Embryonal rests may be found in the roof of the pharynx. Variations in structure are frequently found in old age and in pregnancy. It is not yet certain, though very possible, that the hypophysis is of great importance, and probably a colloid substance is to be regarded as its active secretion. If the hypophysis be removed a condition resembling the changes in myxœdema results, but experiments give no information as to the cause of acromegaly, which is probably a polyglandular disease. The posterior lobe exerts a powerful action upon the blood-vessels, and shares in the regulation of metabolism; it also acts upon unstriated muscle

and dilates the pupil. Tumours of the hypophysis may cause visual troubles by mechanical action, and frequently the adiposogenital dystrophic syndrome of symptoms. Other changes in it are often associated with diseases of other blood-glands, diabetes, myxœdema, etc.

JOHN D. COMRIE.

A NEW METHOD FOR THE REPRESENTATION OF GLIA (603) TISSUE, WITH A CONTRIBUTION TO OUR KNOWLEDGE OF THE STRUCTURE AND ARRANGEMENT OF THE NEUROGLIA IN THE BRAIN OF THE DOG. (Eine neue Methode zur Darstellung des Gliagewebes nebst Beiträgen zur Kenntnis des Baues und Anordnung der Neuroglia des Hundehirns.) V. FIEANDT, *Arch. f. Mik. Anat.*, Bd. 76, H. 1, S. 125.

THE contents of this article, which extends to over eighty pages, do not lend themselves to an abstract, but the importance of the conclusions renders the perusal of the steps by which they have been reached of great interest.

The author claims that none of the known methods for the staining of the neuroglia solves the problem of the relation of the glia fibres to the glia cell, i.e. whether the fibres are spatially related to the cell protoplasm or are an intercellular substance or are an intraplasmatic differentiation product.

The conclusions are as follows:—

1. By fixation in Heidenhain's sublimat-trichlor-acetic acid mixture and staining by Mallory's phosphotungstic-acid-hæmatoxylin with subsequent differentiation with ferric chloride the glia tissue can be stained electively.

2. The glia fibres and glia protoplasm are both represented, and the latter is proved to be an extensive syncytium formed by the widely-ramifying processes of the glia cells, which are in continuous connection with one another. The author thus supports the Hardesty-Held conception of the syncytial structure of the glia tissue.

3. Regarding the relationship of the glia fibres to the glia protoplasm, it is stated that these run either on the surface or within the filaments of the glia reticulum, and are in the same relation to the protoplasm of the cell body of the glia cells. The possibility that the fibres, to a certain extent of their course, run independently cannot be denied.

4. Beneath the pia and bordering the adventitia of the vessels within the brain substance, the glia forms a "limiting membrane"

—the *membrana limitans gliae superficialis* and *perivascularis*. This consists of glia protoplasmic elements everywhere connected to the glia syncytium.

5. In the cerebral cortex the glia tissue consists of fine protoplasmic filaments forming a reticulum. The pericellular or diffuse network described by Golgi, Meyer, and Bethe must be looked upon as isomorphous with this glia reticulum.

6. In the glia reticulum of the grey matter certain granules are found—named by the author “gliosomen,” and regarded by him as protoplasmic differentiation products of specific nature. It is suggested that the rows of gliosomen are an intermediate stage between the undifferentiated protoplasm and the specific fibres. If this is the case a new point of view will have been attained regarding the histogenetic origin of the glia substance of the cortex.

The tissue is prepared by fixing small pieces, 2 mm. in thickness and 1 cm. in breadth and length, in Heidenhain's sublimate-trichlor-acetic acid mixture for thirty-six hours, then transferring directly to 96 per cent. alcohol for five to seven days, absolute alcohol for two to three days, and embedding in hard paraffin according to Planter's method, using cedar oil and ligroin. The subsequent steps are those of Mallory's neuroglia stain, differentiating by means of freshly prepared ferric chloride. The nuclei of the glia cells and the glia fibres stain deep blue, the glia protoplasm light blue, and all the other elements of the tissue are decolorized by the ferric chloride.

Of the theoretical assumptions on which this method rests, the most important is the rôle of the trichlor-acetic acid, which acts as a mordant to the glia protoplasm and fibres. This mordanting must partly also be ascribed to the sublimate. The alcohol for use after fixation must be 96 per cent. Weaker strengths cause the myelin to swell, and absolute alcohol tends to cause its dissolution. The polychromasia of the Mallory staining solution must be ascribed to the action of the peroxide of hydrogen on the easily soluble phosphotungstic acid, through which bodies arise containing different amounts of oxygen. These bodies, according to the differing affinities of the tissue elements subjected to the mordant, stain red or blue, and in the differentiation the ferric chloride removes the stain from the elements coloured red—*e.g.* axis cylinder, connective tissue, and red blood corpuscles.

This method has certain grave disadvantages. It stains electively only when a certain degree of differentiation has been obtained, and certain tissue elements—*e.g.*, Nissl's granules—retain the stain long. The material must also be fixed *immediately* after death, for the neuroglia elements very soon lose their specific staining properties.

JAMES W. DAWSON.

PHYSIOLOGY.

**THE FUNCTION OF THE HYPOPHYSIS AND THE ACTIONS
(604) OF INJECTION OF ITS EXTRACT UPON ANIMALS.**

FRANCHINI, *Berl. klin. Wchnschr.*, April 4 and 18, 1910, Sn. 613 and 719.

THE writer found that the extract of the pituitary body from cattle and horses produced the following effects upon rabbits:—

There were considerable metabolic changes, especially a deficit of calcium and magnesium salts, with increase of these in the circulating blood, but seldom any glycosuria.

It also caused ulcers in the intestine, accompanied by small hæmorrhages. The effects were produced chiefly upon intravenous injection, but also, though to a less extent, when administration was made by mouth or subcutaneously.

The anterior lobe was comparatively inert, and acted more powerfully when not separated from the layer of cells between it and the posterior lobe, but the latter produced most strongly the effects already mentioned. The hinder lobe also contained a substance endowed with strong mydriatic action upon the frog's eye.

JOHN D. COMRIE.

**THE NITROGEN, PHOSPHORUS, AND CALCIUM EXCHANGE
(605) IN RABBITS TREATED WITH PITUITARY EXTRACT.**

(Il ricambio di N. P. e Ca nei conigli trattati con iniezioni di estratto di ipofisi.) ALBERTO MOCHI, *Riv. di Pat. nerv. e ment.*, Vol. xv., Fasc. 8.

RABBITS were injected with extract of the hypophysis of lambs and oxen. A prolonged course of subcutaneous injection gave rise to a slight diminution of weight and an increased excretion of nitrogen. There was a well-marked loss of phosphorus and calcium. These latter elements were found in the excretions in about the same relative proportions as that in which they exist in bone, hence it would appear that the calcium and phosphorus loss was due to the destruction of osseous tissue.

F. GOLLA.

**ANALYSIS OF THE EFFECT OF CHOLINE. (Beiträge zur Analyse
(606) der Cholinwirkung.) F. MÜLLER, *Pflueger's Arch.*, Bd. 134,
H. 6, 7 und 8, p. 289.**

THE study of the effect on the blood-pressure produced by intravenous injections of choline has yielded very contradictory results.

While the majority of observers always obtain a fall of blood-pressure, some authors always find a rise. In a previous paper (*Zeitschr. f. phys. Chemie*, Vol. 65, p. 420) the author has recorded his observations, which show that in his hands different choline preparations always produce a fall of blood-pressure.

In the present paper the factors contributing to the fall of blood-pressure and the pharmacological action of choline generally are dealt with. The fall of blood-pressure is brought about by a stasis of blood in the heart and by a dilatation of the blood-vessels in the limbs, kidneys and intestine. The blood-vessels of the brain are also dilated. If the peripheral dilatation is prevented by atropine, choline produces a peripheral vaso-constriction, so that after atropine choline produces a rise of blood-pressure.

The action of choline on smooth muscle (intestine, uterus, iris) presents close analogies with the action of physostigmine. Pharmacologically choline should therefore be classed with that drug and not with the ammonium bases to which it chemically belongs.

W. CRAMER.

THE SYMPATHETIC INNERVATION OF THE SKIN OF THE
(607) **FROG.** J. N. LANGLEY (*Proc. Physiol. Soc.*), *Journ. Physiol.*,
July 9, 1910.

In this paper it is pointed out that, in the frog, the vaso-motor fibres to the web run solely in the sciatic, and that all the vaso-motor fibres to the rest of the skin run in the cutaneous nerves, i.e. as in the mammal; and, secondly, that each sympathetic ganglion sends most of its post-ganglionic fibres to the corresponding spinal nerve.

A. NINIAN BRUCE.

THE SYMPATHETIC INNERVATION OF THE VISCERA. J. N.
(608) LANGLEY and L. ORBELI (*Proc. Physiol. Soc.*), *Journ. Physiol.*,
July 9, 1910.

Here it is shown that in its general features the plan of the sympathetic innervation of the viscera in the frog is the same as that of the mammal, and that the statement that in the frog the sympathetic innervation of the alimentary canal and its blood-vessels is segmental is incorrect.

A. NINIAN BRUCE.

INHIBITORY FIBRES FOR THE BLADDER IN THE PELVIC (609) NERVE. ANTAGONISM BY CURARE OF THE NICOTINE STIMULATION OF NERVE CELLS. J. N. LANGLEY. (*Proc. Physiol. Soc.*), *Journ. Physiol.*, July 9, 1910.

HERE it is pointed out that the paresis of motor nerve fibres to the bladder caused by curari is due to an action of the alkaloid on the peripheral nerve cells, and that the antagonistic action of curari as regards nicotine is fundamentally the same on autonomic nerve-cells and on striated muscles. A. NINIAN BRUCE.

PATHOLOGY.

THE FIBRILLARY AND RETICULAR STRUCTURES OF THE (610) NERVOUS CELL IN STRYCHNINE POISONING. (Gli apparati fibrillari e reticolari delle cellule nervose nell'avvelenamento sperimentale da stricnina.) G. COSTANTINI, *Riv. di Pat. nerv. e ment.*, Vol. xv., Fasc. 8, p. 477.

WHEN an animal has been experimentally poisoned with strychnine marked changes are found in the anterior horn cells as regards their neuro-fibrillary structure. These changes are obvious when the methods of Bielchowsky and Cajal are used, but can hardly be detected by the method of Donaggio. With the method of Bielchowsky a condensation of the neuro-fibrillary structure may be observed, sometimes at the centre of the cell and sometimes at its periphery. With the method of Cajal the substance of the poisoned cell appears to be more deeply stained yellow in the central part, whilst the fibrils appear less numerous but larger and more tortuous than in the sound cell. With the method of Donaggio the formation of numerous endocellular vacuoles may be seen. The author considers that it is probable that the explanation of the discrepant results obtained by different methods lies in the presence of two different systems of cell structure which he names fibrillary and reticular structures. The alterations of cell structure recorded are by no means specific, but probably simply an expression of disordered metabolism. F. GOLLA.

SOME NEW RESEARCHES ON THE STRUCTURE OF THE (611) LACUNÆ FOUND IN CEREBRAL DISINTEGRATION. (Alcune nuove ricerche sulla struttura delle lacune di disintegrazione cerebrale.) GIUNIO CATÒLA, *Riv. di Pat. nerv. e ment.*, Vol. xv., Fasc. 10, p. 605.

THE author considers that the lacunar formation in cases of cerebral degeneration with arterio-sclerosis results from an in-

inflammation of the perivascular sheaths with a progressive infiltration of the surrounding nervous tissue.

In the walls of the lacunæ he describes two layers: an internal marginal layer of a granular tissue with a complete absence of nervous elements, and an external layer containing nerve fibres, some with marked degeneration of the myelin sheath.

F. GOLLA.

NOTE ON THE CENTRAL ORIGIN OF SOME CASES OF
(612) **SO-CALLED HEART-BLOCK.** J. F. GOODHART, *Lancet*,
Sept 10, 1910, p. 792.

THE writer's view is that some cases of Stokes-Adams disease cannot be explained by a condition of heart-block, but that they are primarily cerebral in origin. The strongest argument, he considers, against the occurrence of heart-block being the cause of such cerebral symptoms as giddiness, fainting, and slow pulse, is that people with extreme forms of heart disease never faint. In a case of his own which he records the malady appeared to be epileptiform in nature, and not cardiac in origin.

J. H. HARVEY PIRIE.

A CONTRIBUTION TO THE SUBJECT OF TUMOURS OF THE
(613) **HYPOPHYSIS.** D. A. LEWIS, *Journ. Amer. Med. Assoc.*, Sept.
17, p. 1002.

TWO cases are here described. One was that of a tumour developing from the cranio-pharyngeal duct, the other a hyperplasia of the anterior lobe of the hypophysis with acromegaly. The conclusions come to by the author from a consideration of these and of the literature are as follows:—1. The most common tumour of the infundibulum is that developing from inclusions of the cranio-pharyngeal duct. These may be cystic or solid. They are more frequently associated with Fröhlich's syndrome (adiposity, genital atrophy, and, in the male, development of the feminine type) than any other type of intracranial tumour. 2. The most common lesion of the hypophysis in cases of acromegaly is the struma or adenoma of the anterior lobe. In the early stage of the disease, the course having been interrupted by an inter-current affection, a hyperplasia of the anterior lobe may be found. 3. In cases of acromegaly in which there is no enlargement of the hypophysis, careful examination as to the character of the cells should be made. In cases of acromegaly in which no gross or micro-

scopic changes are found in the gland, the examination should not be regarded as complete unless a careful search for and study of the pharyngeal hypophysis has been made. (Haberfeld has noted that patients of advanced age practically always have actively functioning hypophyseal tissue in the vault of the pharynx.) 4. Tumours developing from the pars intermedia are rare, but three cases being reported. Two of these gave rise to no symptoms; one died as the result of increased intracranial pressure. This patient was exceedingly obese. 5. It is probable that some of the tumours arising from the pars intermedia may have been regarded as peculiar types of adenoma or sarcoma. 6. Stains which differentiate granules should be used for all growths of the hypophysis, since its cells tend to reproduce the morphology of a sarcoma when proliferating. The specific granules will differentiate the hypophyseal cells from those of a sarcoma. 7. Failure to recognise the morphology of the different elements in the hypophysis and their relation to tumour formation accounts for much of the confusion concerning the relation of the gland to acromegaly.

J. H. HARVEY PIRIE.

ON THE SO-CALLED MILIARY ANEURYSMS OF THE BRAIN

(614) **VESSELS.** (*Ueber die sogenannten miliaren Aneurysmen der Hirngefäße.*) PICK, *Berl. klin. Wchnschr.*, Feb. 21 and 28, 1910, S. 382.

THE writer gives the results of examining eleven brains from apoplectic and other cases with reference to the presence of aneurysms on their arteries. He gives an epitome of the work of Charcot, Ellis, etc., upon this subject, and describes a method he has devised for breaking up the brain substance in an area which it is desired to examine while leaving the arteries intact for examination. This consists, briefly, in placing the block of brain tissue in which the hæmorrhage is situated into a vessel of saline solution, and shaking this for eight to ten hours by means of the shaking apparatus found in bacteriological laboratories. The vessels are thus freed from the brain tissue, which collects into small rounded masses in the fluid. The vessels are much less liable to be damaged than if they be roughly rinsed out with water.

His conclusions were that the aneurysms which rupture in cases of fatal cerebral hæmorrhage are not those of miliary size, but ones considerably larger, and that these are either of the dissecting or false variety. Further, he considers that the Charcot-Bouchard teaching of miliary aneurysms as the source of the hæmorrhage is somewhat exaggerated, vessels unaffected by aneurysm also frequently giving way.

JOHN D. COMRIE.

A NEW ALBUMEN TEST FOR CEREBRO-SPINAL FLUID.

(615) (Über eine neue Eiweissprobe für die Cerebrospinalflüssigkeit.)

PANDY, *Neurol. Centralbl.* Sept. 1, 1910, S. 915.

THE test is based on the fact that globulin, if present in a cerebro-spinal fluid in pathological amounts, is precipitated by carbolic acid.

To 1 c.c. of a definite solution of carbolic acid in water (acid. carbolic cryst. 1 part, aq. destil. 15 parts) is added 1 drop of the cerebro-spinal fluid. If the test is positive, a bluish-white, smoky turbidity appears after a few seconds at the junction of the two fluids. The same result is given by using a 4 per cent. solution of kresol or a 10 per cent. solution of pyrogallol instead of the carbolic acid solution; but other derivatives of phenol do not give the reaction so definitely.

The author has applied the test to 250 cerebro-spinal fluids. Of 117 cases of paralysis, 106 gave a very distinct reaction, 7 gave a slight reaction, and 4 gave a negative reaction. To the same cerebro-spinal fluids the Nonne-Apelt test was applied; this test gave 11 strongly positive reactions and only 1 negative reaction.

Of 113 non-paralytic cases, only 5 gave a strongly positive reaction, but of these 1 has since been found, by post-mortem investigation, to have been suffering from paralysis; each of these 5 cases gave a positive reaction when submitted to the Nonne-Apelt and to the Ross-Jones tests. Fourteen of the 113 cases gave a weak reaction to the carbolic test as against 29 as obtained by the Nonne-Apelt method; and of these 14, in 11 cases a suspicion of lues was justifiable.

F. ESMOND REYNOLDS.

THE RELATIONSHIP OF SYPHILIS TO NERVOUS AND OTHER(616) **INTERNAL DISEASES ON THE BASIS OF 573 SERO-****LOGICAL INVESTIGATIONS.** (Ueber die Beziehungen der**Syphilis zu nerven und anderen inneren Erkrankungen auf****Grund von 573 serologischen Untersuchungen.) LEDERMANN,***Berl. klin. Wchnschr.*, Nr. 39, 1910, S. 1787.

THE Wassermann reaction having been applied to the sera of 573 patients suffering from a great many different diseases, the author, in this paper, summarises his results. Of certain of the groups of diseases he gives short clinical notes, and refers to the clinical evidences or history of syphilis. In regard to anti-syphilitic treatment (mercurial), his results agree with those of other investigators as to the great majority of treated cases failing to give a positive reaction.

F. ESMOND REYNOLDS.

CLINICAL NEUROLOGY.

**A CASE OF URÆMIA WITH FACIAL PARALYSIS AND
(617) INTESTINAL ULCERATION** G. PARKER, *Lancet*, Oct. 15,
1910, p. 1134.

AFTER a fortnight's neuralgia this patient developed a facial paralysis, and on the next day passed a large quantity of blood per rectum. Vomiting, pyrexia, and some convulsions ensued within the following week. Then the patient recovered. The urine contained albumin, but no casts; the sp. gr. was 1014. The paralysis, which was of the ordinary peripheral type, cleared up in about a month. Headaches and some small hæmorrhages from intestinal ulceration recurred for some months afterwards. Peripheral facial paralysis is a rare complication of Bright's disease; the writer is inclined to attribute it to a hæmorrhage or œdema in the sheath of the nerve.

J. H. HARVEY PIRIE.

A FATAL CASE OF VISCERAL CRISIS IN A TABETIC. (Quelques
(618) considérations sur un cas de crise viscérale mortelle chez un
tabétique.) GOLDSTEIN, *Journal de neurologie*, July 20, 1910,
p. 361.

IN a typical case of tabes, in a patient who had suffered from gastric crises for years, death supervened within twenty-four hours of an intestinal crisis, with severe diarrhœa. Fatal cases of visceral crises in tabes are rare.

S. A. K. WILSON.

**THE DIAGNOSIS OF INFANTILE PARALYSIS IN THE
(619) PRODROMAL AND EARLY ACUTE STAGE AS FOUND
IN THE EXPERIMENTAL STUDY OF ACUTE POLIO-
MYELITIS IN MONKEYS, WITH REPORT OF FINDINGS
IN FOUR HUMAN CASES.** W. P. LUCAS, *Boston Med. and
Surg. Journ.*, Aug. 11, p. 245.

It is now clear that the certain sign of poliomyelitis—paralysis—appears only when the virus has almost spent itself. In view of the possible (one almost writes probable) discovery of a specific means of protection, it becomes important to find means of making an early fairly accurate diagnosis. So far, no certain reaction by which a positive diagnosis can be made has been found, but certain findings in the blood and spinal fluid, along with certain

symptoms, will point very strongly to the onset of an attack. They are as follows:—

Blood.—In the acute stage there is a well-marked leucopenia with a distinct relative lymphocytosis. The spinal fluid shows even more constant and characteristic changes during the incubation period, prodromal and acute stage, disappearing about the time that the acute symptoms begin to subside. There is a marked increase in the amount of fluid obtained by lumbar puncture; the cellular content is also very much increased, the cells being chiefly of the large mononuclear type.

Noteworthy prodromal symptoms are:—Irritability, restlessness, pain in spine or extremities, apathy.

Important symptoms during the acute stage are:—Fever, 100 to 106 degs., duration two to seven days; vomiting (25 per cent. in New York series); restlessness; apathy; rigidity of neck; headache (frontal); delirium; stupor; convulsions; photophobia; dysphagia; sluggish pupils; general pain (early in 58 per cent.); absence of deep reflexes, cold extremities (vaso-motor changes).

J. H. HARVEY PIRIE.

TWO CASES OF POLIOMYELITIS IN ONE HOUSE. C. R. (620) SUTHERLAND and W. ROBINSON, *Lancet*, Oct. 8, 1910, p. 1083

A SHORT note of two brothers, aged 12 and 7 respectively, who were attacked within four days of each other, each becoming feverish about a week after bathing. Headache, pain at back of neck, becoming more severe as it spread down to the back and legs, and restlessness were prominent early symptoms. In both there was residual paralysis in the lower limbs, in the elder boy also in the arms.

J. H. HARVEY PIRIE.

PATHOLOGY AND BACTERIOLOGY OF ACUTE ANTERIOR

(621) **POLIOMYELITIS.** H. E. ROBERTSON and H. J. CHESLEY, *Journ. Amer. Med. Assoc.*, Sept. 17, p. 1013.

THIS paper is merely an abstract of a communication read by the author before the American Medical Association, based on six autopsied cases. There do not appear to be any essentially new facts brought out in the pathology. In connection with the bacteriology, it is interesting to note that Geirsvold's diplococcus was obtained in pure culture from the spinal fluid of seven cases, and also in cultures from the blood, mouth, lung, spleen, kidney, and brain of one case. But experiments confirmed the opinion of other observers that this organism is not a causative factor in poliomyelitis.

J. H. HARVEY PIRIE.

CEREBRO-SPINAL MENINGITIS OF FULMINATING TYPE
 (622) **ACCOMPANIED BY ACUTE OTITIS MEDIA SIMULATING**
MASTOID INVOLVEMENT. S. H. BROWN, *Med. Record*,
 1910, i., p. 1010.

A ROBUST workman, aged 29, was taken ill suddenly with severe headache and pain in the right ear. The following morning the tympanic membrane ruptured, and pus escaped. In the evening the headache was much worse, and the next morning he was unconscious, and convulsions occurred in rapid succession. The right mastoid was opened, and the bone was found to be very dense; there were very few granulations and hardly any pus. The left mastoid showed nothing of note. Examination of the cerebro-spinal fluid revealed numerous meningococci. The patient continued to have convulsions after the operation, and died seventy-two hours after the onset of the illness. No serum was given. The necropsy showed cerebro-spinal meningitis, with purulent exudation at the base of the brain, most marked on the left side. The infection was probably secondary, and its point of access was through the diseased middle ear.

J. D. ROLLESTON.

PSYCHICAL SEQUELÆ OF EPIDEMIC CEREBRO-SPINAL MENINGITIS.
 (623) **(Contribution à l'étude des séquelles psychiques de la méningite cérébro-spinale épidémique.)** R. VOISIN and G. PAISSEAU, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, 1910, xxix., p. 670.

EIGHTEEN cases of epidemic cerebro-spinal meningitis were treated with anti-meningococcic serum in Hutinel's service at the Hôpital des Enfants Malades in 1909. Fourteen were discharged in good health. Eight months after discharge one patient was brought back for deaf-mutism. An inquiry was then instituted as to the fate of the rest. Of 11 who returned for purposes of examination 3 who appeared three, nine, and ten months respectively after their discharge showed no appreciable residues of their disease. In another 2 the symptoms were purely somatic, viz., deaf-mutism and optic atrophy. In the remaining 6, psychical disorders were noted, which were very marked in 3 cases and slighter in the rest, consisting in fits of passion, eccentricity, and a change of character. In only two instances was there mental enfeeblement, in each case of slight degree.

Two varieties of psychical disorder in cerebro-spinal meningitis must be distinguished. The first is that in which the symptoms arise in the course of the disease, and persist after subsidence of

the acute stage. The second is that in which chronic mental disorder appears after recovery from the meningitis and its attendant psychical symptoms. This variety does not appear to be related to the gravity of the initial attack, nor to be specially frequent in those with an hereditary nervous taint. It is uncertain whether the late symptoms are due to a purely encephalic lesion or to the persistence of a meningeal inflammation. In either case there is at work a cicatricial process following the inflammatory lesions of the acute stage.

The prognosis in cerebro-spinal meningitis should therefore be very guarded. Possibly complete recovery may take place, but it is to be feared that the children may be abnormal intellectually.

As a prophylactic measure the writers suggest the performance of lumbar puncture after apparent recovery, and the injection of small doses of serum at regular intervals in cases where there is a persistent lymphocytosis.

J. D. ROLLESTON.

RARITY OF SEQUELÆ IN CEREBRO-SPINAL MENINGITIS
(624) TREATED WITH INTRA-SPINAL INJECTIONS OF ANTI-MENINGOCOCCIC SERUM. (Rareté des séquelles chez les sujets guéris de méningites cérébro-spinales à la suite des injections intra-rachidiennes de sérum anti-meningococcique.)
 A. NETTER, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, 1910, xxx., p. 131; TRIBOULET, *ibid.*, p. 150.

THE recent communications of Prof. Hutinel and of his pupils, Voisin and Paisseau, induced Netter to inquire into the subsequent history of his cases of cerebro-spinal meningitis. In most of those about whom he obtained information the time which had elapsed since the attack exceeded a year. The great majority—44 out of 65—showed no disturbance whatever. In only 6 cases were somatic sequelæ observed, viz., 3 cases of complete deafness, 1 of unilateral deafness, 1 of impaired vision, and 1 of spastic paralysis. None of the children who had been discharged as cured showed any signs of hydrocephalus. A fairly large proportion—20 per cent.—showed the changes of character noted by Voisin and Paisseau, but as a rule they were ill-marked, and disappeared in course of time. The rarity of sequelæ in his cases Netter attributes to the treatment employed.

In the subsequent discussion, Triboulet stated that among 25 cases of cerebro-spinal meningitis which had been treated with large doses of serum he had observed, in addition to cases of deafness, 1 of blindness and 2 of hydrocephalus, one of which had

died. In another child, aged $3\frac{1}{2}$ years, who died of whooping-cough two months after apparent recovery from cerebro-spinal meningitis, the necropsy showed a fibroid condition of the pia, flattening of the frontal lobes, a gelatinous mass in the margin of the inter-hemispheric fissure, and tough adhesions on the posterior surface of the cord, especially in the dorso-lumbar region. The recovery was thus by no means established anatomically, and the prognosis should therefore be guarded in cases of apparent recovery from cerebro-spinal meningitis.

J. D. ROLLESTON.

**SEROTHERAPY AND ANAPHYLAXIS IN CERE BRO-SPINAL
(625) MENINGITIS.** (*Sérothérapie et anaphylaxie dans la méningite cérébro-spinale.*) V. HUTINEL, *Presse méd.*, 1910, p. 497.

IN opposition to Netter, who stated that serum phenomena in the treatment of cerebro-spinal meningitis are seldom alarming and never fatal, Hutinel records four cases in children who developed alarming nervous symptoms, and died shortly after the last injection, which had been given several days after the first. Two of the cases were also suffering from tuberculosis, which is well known to favour the production of anaphylaxis.

J. D. ROLLESTON.

**MENINGEAL REACTION AFTER SPINAL SEROTHERAPY IN
(626) CERE BRO-SPINAL MENINGITIS.** (*Réactions méningées après sérothérapie rachidienne dans un cas de méningite cérébro-spinale.*) SICARD and SALIN, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, 1910, xxx., p. 39.

A MAN, aged 40, suffering from epidemic cerebro-spinal meningitis, after each intra-spinal injection of Dopter's serum had a rise of temperature, severe constitutional disturbance, re-appearance of meningeal symptoms, headache, vomiting, and contractures. Finally recovery took place. The symptoms first occurred four hours after injection, were most marked in twelve to eighteen hours, and disappeared in forty-eight hours. The writers think that anaphylaxis does not account for all the symptoms following the injection of serum, but hold that in some cases which have no serum rash the symptoms are due to a meningo-medullary, or even a cervico-bulbar reaction.

J. D. ROLLESTON.

**MENINGOCOCCUS SEPTICÆMIA RESEMBLING INTERMITTENT
(627) FEVER. TREATMENT BY ANTI-MENINGOCOCCIC SERUM.**

(Septicémie méningococcique essentielle à caractères de fièvre intermittente. Traitement par le sérum anti-meningococcique.)

F. CHEVREL and J. BOURDINIÈRE (of Rennes), *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, 1910, xxx., p. 165.

THE recent papers of Netter (*v. Review*, 1909, p. 741) and Monziols and Loiseleur (*ib.*, 1910, p. 304) on this subject have induced the writers to publish the following case:—A woman, aged 42, was admitted to hospital on April 16, 1910, complaining of severe headache and pains in the limbs, and presenting a generalised eruption resembling erythema nodosum. There was no sign of any meningeal reaction. The urine contained a trace of albumin. From April 16 to May 2 febrile attacks resembling those of malaria occurred at irregular intervals. The diagnosis of malaria, however, was excluded, as the patient had never left the Rennes district, where the disease was unknown, and the plasmodium was not found in the blood. On April 30 the meningococcus was isolated from the blood. On May 6 lumbar puncture was performed, although there was no sign of meningitis, and the cerebro-spinal fluid was found to be quite normal. Microscopical examination and cultures were negative. On May 9, 13, and 19 Dopter's serum was injected intravenously, and on the day following each injection a febrile attack occurred. On the 23rd, after a fourth injection, signs of anaphylaxis developed, but lasted only a few minutes. The temperature became normal the same day, and the other symptoms disappeared. The patient was discharged completely recovered on June 15.

J. D. ROLLESTON.

**PACHYMENINGITIS INTERNA INFECTIOSA ACUTA AND
(628) MENINGISMUS. (Pachymeningitis interna infectiosa acuta
und Meningismus.)** SCHOTTMÜLLER, *Münch. med. Wchnschr.*,
Sept. 20, 1910, S. 1984.

THE author refers to the usual points of value in diagnosis. He then quotes a case of puerperal sepsis in which meningismus developed. In another case, by prolonged staining of sections, streptococci were found in the perivascular lymphatics of the membranes, the foci being surrounded by microscopic hæmorrhages. The writer concludes that there is a gradual transition from true meningismus or pseudo-meningitis to meningitis proper, and sug-

gests that the term "meningismus" would be better replaced by meningitis disseminata acuta septica seu infectiosa. There is practically nothing new in this paper. F. ESMOND REYNOLDS.

A CASE OF TUMOUR OF THE PITUITARY BODY. W. BORD,
(629) *Lancet*, Oct. 15, 1910, p. 1129.

THIS case, a man of 36, had a history of eight years' standing. It commenced with temporal neuralgia, then temporal hemicropia, followed later by complete blindness. Headaches, epileptic fits, ataxia, mania, and finally stupor ensued. Cerebro-spinal fluid discharged from the left nostril. The cerebro-spinal fluid, although clear, contained a large quantity of albumin, and showed an extraordinary lymphocytosis. There was no acromegaly and no wasting, indeed, rather an increase in adiposity. Death occurred without any warning when the patient was turning round in bed. At the autopsy there was found a soft fleshy tumour about 7.2×3.3 cm. growing from the infundibulum. It had the microscopic character of a mixed-cell sarcoma. It had crushed the optic chiasma out of recognition, separated the crura widely, and distorted the pons. In the floor of the skull it had excavated the sella turcica into a cavern 6.5×4 cm., and on the left side opened into the antrum of Highmore. It was merely separated from the pharynx by a membranous partition. J. H. HARVEY PIRIE.

CEREBELLAR CYST TREATED [SUCCESSFULLY] BY OPERATION. (630) **TION.** (Operativ behandelte Kleinhirncyste.) SCHMIEDEN
(Berlin), *Zentralbl. f. Chirurg.*, No. 29, 1910.

THIS is a short report of the case of a woman, aged 24, who had been successfully operated upon for cerebellar cyst twelve months previously. Since the operation complete recovery has occurred. The illness commenced a few months before the operation with headache, vomiting, and affection of vision. A diagnosis of tumour of the cerebellum was made, the chief symptoms being nystagmus, ocular paresis, optic neuritis, loss of patellar reflexes, vertigo, and *asynergie cérébelleuse*. The lesion was localised in the cerebellar substance, on the left side, in the neighbourhood of the vermiform process. At the operation both hemispheres of the cerebellum were exposed. A large cyst was found in the region at which the lesion had been localised. The cyst was drained and part of its wall removed. Recovery followed in a few weeks, and after the disappearance of all the symptoms the patient was discharged from the hospital as cured. Since that time she has remained quite

well, and has been able to do light work. The rapid progress of the severe symptoms, before the operation, had appeared to indicate that the disease would soon terminate fatally.

[In the March number of the *Review of Neurology*, 1910, are tabulated nineteen similar cases of cerebellar cysts, in all of which recovery, complete or partial, followed operation. Oppenheim has recently reported a case of serous meningeal cerebellar cyst in which the symptoms suggested tumour. An operation was performed and the cyst evacuated. Complete recovery followed.—*Deutsche med. Woch.*, No. 2, 1910.] R. T. WILLIAMSON.

**CLINICAL OBSERVATIONS ON PRECOCIOUS AND MALIGNANT
(631) CEREBRAL SYPHILIS.** CONSTANTINI, *Nouv. Icon. de la Salpêtrière*, May-June 1910, p. 286.

A CASE of cerebral syphilis, developing four months after the appearance of the hard chancre, and co-existent with a diffuse maculo-papular eruption. The possible explanation of this remarkably early development of cerebral syphilis is found in the facts of the patient's neuropathic diathesis and chronic alcoholism, and further in a severe traumatism to the head some years before. S. A. K. WILSON.

**A CASE OF PAGET'S DISEASE LIMITED TO THE CRANIAL
(632) BONES.** (Sur un cas de maladie de Paget à localisation céphalique isolée.) CATÒLA, *Nouv. Icon. de la Salpêtrière*, May-June 1910, p. 276.

APPARENTLY the disease is limited to the head in this case, but there seems to be no radiographic record of the condition of the long bones. S. A. K. WILSON.

**ON THE HEMICHOREIC SYNDROME ARISING FROM ORGANIC
(633) LESIONS.** (Sulla sindrome emicoreica da lesione organica.) ROMAGNA MANOIA, *Riv. di Patol. nerv. e ment.*, Vol. xv., Fasc. 10, p. 585.

THE author defines hemichorea as a complex of choreiform movements confined to one side of the body. An extensive bibliography

of cases of hemichorea, with the organic lesions found, then follows. He then proceeds to describe a case of dementia suffering from frequent well-marked cortical discharges confined to the right upper extremity, and in which autopsy revealed a cyst in the superior parietal lobule. Clinical experience of what is generally understood by hemichorea would have saved the author from the lengthy discussion in which he indulges—contrasting the anatomical lesions found in his case with those of the coarse tremor or chorea associated with hypothalamic lesions, to which most of the authors he quotes refer. F. GOLLA.

ON A HITHERTO UNRECOGNISED SYMPTOM OF TETANY.

(634) (*Ueber ein bisher unbekanntes Symptom bei Tetanie (Beinphänomen.)* SCHLESINGER, *Wien. klin. Wchnschr.*, Nr. 9, 1910, S. 315.

THE writer records one case showing a leg symptom in tetany which he compares to Trousseau's arm symptom. The latter consists in the possibility of causing during the intervals of attack a cramp and pain in the upper extremity by means of pressure on the upper arm. The present symptom which he describes was found in a young workman of 17, suffering from tetany. Always when his knees were straight and the thigh suddenly flexed at the hip a cramp at the knee and extreme inversion of the foot was produced within two minutes. JOHN D. COMRIE.

ON NERVOUS DYSPEPSIA. (Über nervöse Dyspepsie.) BOFINGER, (635) *Arch. f. Verdauungs-Krankh.*, Bd. 16, H. 3, 1910, S. 352.

THIS is an article written in philosophic spirit attempting to disentangle the question as to the meaning of the term "nervous dyspepsia." This name was first given to a type of stomach complaints by Leube in 1879, but the use of the stomach tube since then has greatly altered our views as to the dependence of particular gastric symptoms upon definite disease changes. It has led, for example, almost to the disappearance of the so-called chronic gastric catarrh as a clinical description and the substitution of such terms as hyper-secretion, achylia, hyper-chlorhydria, etc. So until recently we find a large group of diseases, *e.g.* hypermotility, peristaltic unrest, nervous belching, pneumatosis, hyper-secretion, hyper-æsthesia, etc., etc., catalogued as of nervous origin.

In the opinion of the writer, however, these must be regarded merely as symptoms of various conditions.

He discusses Strümpell's dictum that "It is not dyspepsia that makes men hypochondriacs, but conversely"; and also Crämer's statement that "People are not patients because they are nervous, but they are nervous because they are sick," both of which, though contradictory, possess much truth. He therefore proposes to recognise the following three types of nervous dyspepsia:—

1. Those of neurogenous origin arising through disease of the organ causing central irritation—neurasthenic type.
2. Those of central origin with centrifugal interference in the functions of the organ—hysterical type.
3. Those of mental origin without such interference—hypochondriacal type.

JOHN D. COMRIE.

IS ACHONDROPLASIA HEREDITARY ? (L'Achondroplasie est-elle (636) héréditaire ?) FRANCHINI and ZANASI, *Nouv. Icon. de la Salpêtrière*, May-June 1910, p. 244.

THE authors describe four cases in detail, including one of a definite family of achondroplasics (father, mother, and daughter), and incline to the opinion that achondroplasia may be physiological, i.e. that it may be considered a variety or variation of the genus homo. They allude to the race of basset hounds as forming a physiological variation of the canine race.

S. A. K. WILSON.

THE ETIOLOGY AND TREATMENT OF RHEUMATOID (637) ARTHRITIS. P. W. LATHAM, *Lancet*, Sept. 24, 1910, p. 927.

IN this communication the author reiterates, though without bringing forward much new evidence to support, his view that rheumatoid arthritis is due to spinal irritation or congestion, or chronic myelitis chiefly affecting the ganglion cells of the anterior horns of the enlargements, but extending also, when the disease is associated with "glossy skin," to the ganglion cells in the posterior horns.

The best advocate for the view seems to be the results of treatment based on this view and directed towards abatement of the spinal

irritation. His plan consists in the application of cantharidis over a large area corresponding to one or both enlargements of the cord. The counter-irritation thus produced is kept up by savin ointment for a week. Opium has usually to be given. The resulting improvement in the joints seems marvellous.

J. H. HARVEY PIRIE.

CEREBRAL AND MENINGEAL COMPLICATIONS OF TYPHOID

(638) **FEVER.** (*Complications cérébrales et méningées de la fièvre typhoïde.*) J. DU CASTEL, *Gaz. des Hôp.*, 1910, p. 1215.

A REVIEW of the literature, to which a bibliography of the articles of the last five years is appended. Special attention is given to the relations between typhoid fever and epilepsy.

J. D. ROLLESTON.

PATHOLOGICAL SLEEP. (Le sommeil pathologique. L'hypersomme.)

(639) SALMON, *Rev. de méd.*, Sept. 10, 1910, p. 765.

IN a somewhat speculative paper the author considers the cause of "hypersomnia," which he distinguishes from the torpor of cerebral tumour and œdema, or hydrocephalus, and characterises as an exaggeration of normal sleep, being deeper and lasting longer than normal sleep. It is thus distinguished from the somnolence of anæmia or old age, which is usually a light sleep, and it has this feature, that the more they sleep, the more they want to sleep.

He disagrees with the toxic theory of the causation of sleep, on the ground that such intoxication tends to cause chromatolysis of the cells of the cerebral cortex, whereas it has been proved experimentally that the chromatic substance of these cells is more marked during sleep than in the waking hours. He therefore supposes that these toxins stimulate the glands of internal secretion, especially the pituitary, to elaborate antitoxins, and that such stimulation is the normal cause of sleep.

He admits that a slight degree of intoxication of the nerve cells, sufficient to stimulate the formation of the chromatic substance, may cause "hypersomnia," but such an intoxication, if more severe, or if long continued, leads to chromatolysis and consequent insomnia. "Hypersomnia" may therefore be caused by—

1. An undue formation of toxins, as in slight disorders of the alimentary or excretory systems. In influenza this may cause an extreme "hypersomnia," followed by intractable insomnia.

2. Any stagnation of the local blood supply of the brain, causing a local increase of toxic products. This would explain the "hypersomnia" of cerebral congestion, which occurs in "mountain sickness," in tumours compressing the venous sinuses, and after epileptic attacks.

3. Any disease of the pituitary gland, causing slight loss of function (complete loss of function as in abscess leads to insomnia), or diminution of function of the genital glands, thyroid or other glands of internal secretion.

4. Overaction of the pituitary gland, as in hyperplasia, or resulting from stimulation of the infundibulum, the floor of the third ventricle, or the neighbouring tracts, by syphilis or inflammation, as in sphenoidal suppuration.

The "hypersomnia" resulting from adenoids or other affections of the naso-pharynx he explains by the discovery, by Civalleri, of a gland in that situation anatomically similar to the pituitary. The treatment recommended for "hypersomnia" is based on the theories of its cause. The author especially recommends opotherapy in cases due to inadequate glandular function.

J. G. GREENFIELD.

THE OCULAR PALSIES ASSOCIATED WITH THE INTRODUCTION OF SPINAL ANÆSTHESIA BY VARIOUS SOLUTIONS. REBER, *Journ. Amer. Med. Assoc.*, July 30, 1910, p. 380.

IN 2000 cases of lumbar anæsthesia induced in the Samaritan Hospital in Philadelphia palsy of ocular muscles occurred five times. In 2 cases both external recti were affected, in 2 one externus and in the last one externus, together with partial cycloplegia in the same eye.

An analysis of recorded cases is given, including 36 cases in all. In 27 one external rectus was involved, in 6 both external recti, while the remaining 3 presented respectively paresis of the left superior oblique, almost complete ophthalmoplegia externa, and paresis of the third and sixth nerves.

Nearly every local anæsthetic has been employed, and so far no one has been shown to be specially blameworthy, nor can trustworthy information be obtained from the dosage employed. The average time of onset in the 27 cases in which this was noted was ten days after the operation. The duration of the diplopia was very varied, terminating in some cases within five or six days, in others remaining from six to eight months, and in five still persistent when the cases were last heard of. In 26 cases that were watched 16 positive recoveries were observed.

Various views as to the pathogenesis of this condition are mentioned, and the author seems to incline to the theory of W. Wayne Babcock, that the paresis is due to the presence of impurities or by-products in the solutions used.

H. M. TRAQUAIR.

TRANSITORY CORTICAL BLINDNESS FROM CEREBRAL CON-
(641) **CUSSION.** (*Ueber passagere Rindenblindheit durch Commotio Cerebri.*) HIRSCH, *Deutsche med. Wochenschr.*, 1910, No. 31, S. 1436.

A TWELVE-YEAR-OLD boy was run over by a motor car and rendered unconscious, receiving a severe scalp wound on the back of his head. Consciousness was recovered within half an hour and total amaurosis was found to be present; the moderately dilated pupils reacted very sluggishly to light. The movements of the eyes and the fundi were normal. After three hours perception of light and form sense for large objects had returned. After seven hours, vision was equal to counting fingers close up to the eyes, and right homonymous hemianopia excluding the fixation point was present. The pupils were smaller and acted promptly to light. Next day the hemianopia had almost disappeared, and on the third day the vision and visual field were normal. On re-examination in two months the vision, fields, and fundi were found to be normal.

Discussing the cause of this condition, the author points out that a hæmatoma over the cortical visual area would not have produced such transitory effects. He inclines to the view that in this case the visual area had suffered more severely from the concussion than the cortex as a whole, and therefore required a longer time to recover.

H. M. TRAQUAIR.

VISUAL FIELDS IN ACCESSORY SINUS DISEASE. MACWHINNIE,
(642) *N.Y. Med. Journ.*, Aug. 13, 1910, p. 301.

FIVE cases of accessory sinus disease in which the field of vision was examined before and after operation are reported.

The author's findings differ considerably from those of others.

As a rule enlargement of the blind spot with isolated scotomata in the intermediate zone was found. In no case was either a normal field or a central scotoma present. In some cases a characteristic annular scotoma as well as enlargement of the blind spot was present. The author believes that the optic neuritis,

when present, is due to absorption of toxins from the sphenoidal sinus through the lymphatics. In several cases probing of the sphenoidal sinus was followed in a few minutes by increase in the congestion of the fundus, and in one case by haze of the cornea.

The author advocates exploration of the sphenoidal sinus in cases of optic neuritis with paracentral scotomata whether nasal indications are present or not.

The author's conclusions are :—

1. Central visual acuity is usually but not always diminished.
2. If the visual field is found to be normal, it has not been carefully examined.
3. Absence of pus in the nose, with or without proptosis, does not indicate a normal sphenoid.
4. Relative scotomata for red and white are always present whether the blind spot is enlarged or not.
5. There is always contraction of the field of vision for red, sometimes for white.
6. After operation the scotomata disappear before the periphery of the field enlarges.

H. M. TRAQUAIR.

ABSCESS OF THE OPTIC NERVE AND PAPILLOEDEMA
(643) **FOLLOWING MENINGITIS.** (*Sehnervenabszess und Stauungspapille infolge von Meningitis.*) NAKAIZUMI, *Klin. Monatsbl. f. Augenheilk.*, Juli 1910, S. 17.

THE patient, a healthy student 20 years old, accidentally struck the back of his head, and a few days later his temple, against a window. He gradually became unwell, vomited, and a week after the last blow his right eye suddenly became blind.

Papilloedema following meningitis was diagnosed. After a week unconsciousness set in, followed by panophthalmitis, and death sixteen days after the onset of blindness.

A thick, greenish, purulent exudate was found in the region of the right optic tract and extended only very slightly to the left side. Diffuse injection, together with a slightly purulent fluid, was found at the base of the brain and along the entire cord. Large numbers of staphylococci were present.

Old pleuritic changes on the left side constituted the only other pathological change found.

The right optic nerve was completely destroyed anteriorly by a suppurative process which extended up to the lamina cribrosa. More posteriorly the abscess affected one side of the nerve only and opened freely into a small abscess cavity in the nerve sheath. The inter-vaginal space was obliterated in front and practically

unaffected further back. There was pronounced neuroretinitis and purulent choroiditis.

The author discusses the rarity of the condition, which he attributes to a metastatic focus in the optic nerve leading by direct extension to purulent choroiditis. H. M. TRAQUAIR.

VITILIGO AND THE EYE, AN ADDITION TO OUR KNOWLEDGE (644) OF HERPETIC AFFECTIONS OF THE EYE. GILBERT, *Klin. Monatsbl. f. Augenheilk.*, Juli 1910, S. 24.

SEVERE iritis and optic neuritis occurred in a marked case of vitiligo. The author's view is that the simultaneous occurrence of these eye and skin affections should not be regarded as a coincidence, but that both are results of a single morbid condition neurotrophic in nature. H. M. TRAQUAIR.

MINERS' NYSTAGMUS AND FORMIC ACID. PERCIVAL, *Ophth. (645) Review*, Aug. 1910, p. 229.

IN a short note the author mentions three cases of this affection, two of which were apparently cured within a few months, although the patients continued their work underground.

The third case was very severe, and the patient had been off work for eighteen months without benefit. After two weeks' treatment nystagmus was only elicited on looking upwards.

The formic acid (25 per cent. sol.) is given in doses of ℥v, increasing to ℥x, thrice daily in water. H. M. TRAQUAIR.

PSYCHIATRY.

THE NEUROPATHOLOGY OF THE EYE IN INSANITY. (Zur (646) *Neuropathologie des Auges bei Psychosen.*) HAFKE, *Med. Klinik*, Nr. 31, 1910, S. 1208.

IN a young man confined in an asylum on account of kleptomania both fields of vision were found at first to be concentrically contracted, but after a week typical right homonymous hemianopsia appeared. Subsequently the left field became nearly normal and the right concentrically contracted.

There was also dulness of hearing and hemianæsthesia on the right side.

The author believes that the case was one of genuine functional hemianopsia, and that the form of the field was not due to suggestion.

Secondly, two cases of affection of the pupil during alcoholic excitement are described. The first, also an asylum patient, twice obtained alcohol and became intoxicated and violent. On both occasions the pupils were dilated and fixed, both to light and convergence. The condition passed off in about three hours.

The other case presented similar appearances, but in a less degree.

The views of Bach and others on the cause of these conditions are referred to.

H. M. TRAQUAIR.

**SCARLET FEVER AS AN ETIOLOGICAL FACTOR IN THE
(647) PSYCHOSES.** E. B. FUNKHOUSER, *Amer. Journ. of Insanity*.
1910, lxvi., p. 623.

FUNKHOUSER places the psychoses due to scarlet fever in two groups, according as it acts as a direct or an indirect cause. In the first group are included manic-depressive insanity, fever delirium, post-febrile psychoses, exhaustive psychoses, and dementia præcox. The last may follow scarlet fever very closely, but more often one to four years intervene between the acute infection and the onset of the psychosis. Funkhouser has observed instances in which the intervals ranged from seven months to thirty-one years.

Three personal cases are recorded:—(1) Man, aged 24, strong and bright till six years of age, when he had scarlet fever. Apparent recovery except mental dulness, most noticeable in his school work. Never independent of parents. One year before admission a change in character occurred, and the typical symptoms of dementia præcox developed. (2) Woman, aged 63, normal till eight years of age, when she had scarlet fever with convulsions. Attended school very irregularly, lost interest in studies, and became a high-grade imbecile. At sixty-two symptoms of senile deterioration were observed. (3) Man, aged 30, healthy till five years, when he had scarlet fever, complicated by double otitis. Deaf-mutism followed. After attending a special school, he was employed as a painter for four years. He then became suspicious, homicidal, and suicidal. Prompt recovery after asylum treatment.

J. D. ROLLESTON.

THE WASSERMANN REACTION IN DEMENTIA PARALYTICA.(648) **(Die Wassermann'sche Reaktion bei Dementia paralytica.)**BOAS und NEVE, *Berl. klin. Wchnschr.*, No. 29, 1910, S. 1368.

IN 131 cases in which the blood-serum was examined, positive reactions were given in all. In 85 cases in which the cerebro-spinal fluid was submitted to the test, positive findings were given in only 44 cases (52 per cent.). The authors compare their results with those of other writers, and then discuss the question of the amount of serum or of cerebro-spinal fluid used in carrying out the reaction as a factor in determining the result; the serum always gave a greater fixation than did the same amount of cerebro-spinal fluid.

Ten patients were submitted to the reaction, each at various times during a period of six months; of these 9 gave no variation in the amount of fixation, and it is observed that the one patient who gave variation was suffering, during the course of the experiments, from cancer of the œsophagus in addition to dementia paralytica.

F. ESMOND REYNOLDS.

TREATMENT.**LAMINECTOMY FOR POST-SYPHILITIC NERVE ROOT PAIN.**(649) FRY and SCHWAB, *Journ. of Nerv. and Ment. Dis.*, Aug. 1910, p. 485.

A CASE of severe pain due to a luetic spinal meningitis. The patient died twenty-four hours after the operation.

ERNEST JONES.

THE SURGICAL TREATMENT OF INFANTILE SPINAL(650) **PARALYSIS.** D. SILVER, *Journ. Amer. Med. Assoc.*, Sept., 17, p. 1014.

THE objects of operation in this affection are:—1. Improvement of form in a deformed member, any operation necessarily including long-continued retention in an over-corrected position to allow the over-stretched and atrophied muscles time in which to relax and retract. The methods available are forcible correction, tenotomy, or bone operations.

2. Improvement of position in the non-deformed, or corrected, member—

(a) Through restoration of power to the paralysed muscle (by nerve anastomosis). The only suitable cases, and they are comparatively rare, are those where the lesion affects an entire nerve centre, while other centres remain free. Complete restoration seldom occurs, and there is some loss in the power-giving nerve. The upper arm so far has provided the best results.

(b) Through restoration of muscle balance (by muscle and tendon grafting or transplantation). This method has been well tested and often yields good results. Too much must not be expected, it brings no increase in power, except through subsequent muscular development, it merely permits restoration of an important lost function at the expense of one or more less important. The operative technique is comparatively simple, but the planning of the operation requires great skill and an intimate knowledge of human mechanics. Details of some of the plans adopted at various sites are given.

(c) Through securing greater stability in the paralysed member (by arthrodesis, astragalectomy, silk ligaments, tenodesis, fasciodesis, removal of skin flaps, etc.). These methods come in chiefly when all the muscles controlling a joint are paralysed, and it is desired to prevent deformity or to turn the fluid joint into a stiff one. Various examples are given.

J. H. HARVEY PIRIE.

ON THE FAILURE OF NERVE ANASTOMOSIS IN INFANTILE (651) PALSY. A. STOFFEL, *Lancet*, Sept. 10, 1910, p. 799.

THIS paper is a criticism of some results published by Warrington and Murray in the *Lancet* for April 2, 1910 (see abstract in this *Review*, May 1910, p. 223). The writer, who has had a large experience in neuroplastic operations, attributes the failure to defects in the plan of operation and in the technique. He points out that in the cross section of a nerve the fibres for the different muscles have a fixed position (which he has worked out for most of the nerve trunks of the upper and lower extremities in an article published in the *Deut. Zeitschrift. f. Orthop. Chir.*, Bd. xxv.). It is not, therefore, enough merely to insert one nerve trunk or flap of one nerve trunk into another; but it is necessary to bring healthy motor fibres into contact with the correct bundle of fibres. Further, for proper grafting, a longitudinal incision in a nerve fibre may easily fail to divide the actual nerve fibres; they must be divided transversely, so as to make certain of having a sufficient freshened nerve surface to bring into contact with the paralysed nerve.

J. H. HARVEY PIRIE.

GYNECOLOGICAL OPERATIONS ON NEURASTHENICS. ED.
(652) REYNOLDS, *Boston Med. and Surg. Journ.*, July 28, 1910, Vol. clxiii., No. 4, p. 113.

TWO main classes of neurasthenics come under the notice of the gynecologist, namely, those extreme neurotics who have a train of exaggerated symptoms from a succession of absolutely trifling local lesions, and, secondly, those hopeful cases in whom the nervous instability is secondary to an acquired and curable local lesion. In the first class operative or local treatment only further fixes the patient's attention on the offending organ and increases the evil. Avoidance of operation in such cases is most desirable: still more so long-continued courses of minor treatment. In the second class the removal of the lesion is helpful in so far as it gives subsequent general treatment a better chance of success.

Neurasthenics in whom local lesions are of importance always present a history of persistent local symptoms. Careful study of the chronological sequence of general and local symptoms is of the highest importance in determining the cause of the neurasthenia.

Properly chosen cases do well under reparative and conservative operations. Radical operations are not advisable, except in women past the menopause, or in cases in which a new growth has to be dealt with.

R. W. JOHNSTONE.

REPORT ON THE TREATMENT WITH "EHRlich 606" OF A
(653) **FIRST HUNDRED CASES.** (Bericht über die Behandlung der ersten 100 Fälle mit "Ehrlich 606.") MAXIMILIAN V. ZEISSL, *Wien. med. Wchnschr.*, No. 38, p. 2203.

THE author obtained the following results with injections of Ehrlich's remedy. Ten cases of syphilis with only primary chancre and accompanying adenitis were injected. In none was any trace of general syphilis observed. The glands diminished on the second or third day. In general secondary syphilis large papular syphilides flatten out in five days; small papular syphilides take the longest time. Gummata of the palate, which have already perforated, become clean on the third day and granulate rapidly thereafter.

In cases with persistent pigmented rash, if larger doses do not remove the pigmentation, mercury should be employed in addition.

Two eye affections were treated. The first, an iritis, was relieved in four days. The second, with a paresis of accommodation, was able after six days to read, but not for any length of time.

A tabetic, of eight years' standing, threatening suicide, was given 0.5 gr. Since leaving Vienna, he reported that the cardiac pains were no longer so severe as formerly. A tabetic, of two years' standing, already improved by mercury and atoxyl, showed, seven weeks after injection, no definite improvement. A paralytic, under observation since July 1910, showed considerable improvement. Another paralytic, in an advanced stage, showed no change. More favourable was the case of a patient, infected eight years ago, and suffering since December 1909 from a right-sided hemiplegia. The condition was already improving under mercury.

The author expresses his view that in affections of the central nervous system Ehrlich's remedy should be employed only if the most careful clinical examination reveals a prospect of relief. Special care is necessary in hemiplegia, as the injection produces in most patients increased frequency of the pulse. In these it is better to give several lesser doses (never over 0.45 or 0.5 gr.).

A case of congenital syphilis, eighteen months of age, refractory to mercury, recovered after an injection of 0.03 gr. (The signs of syphilis present are not stated.) A girl of nine years with a lip chancre and a macular syphilide was given 0.05 gr., and the manifestations disappeared. The child is being kept from school, of course, lest other children may possibly be infected.

On the whole, the author considers that no other preparation brings about so rapidly the disappearance of the manifestations of syphilis. Whether these may return later, the author cannot say after a period of observation of two months. But in any case he considers it an unpardonable error not to treat at once with Ehrlich's drug any patients with a primary chancre or recent general manifestations. If optic nerve affections are present, the injections must, of course, not be given.

L. C. PEEL RITCHIE.

Reviews

ACUTE POLIOMYELITIS.

THE August number of *Pediatrics* is devoted entirely to papers dealing with this subject, which has of recent years attained so much importance, owing to its widespread epidemic occurrence, more especially in the United States, which has furnished more than one half of the reported cases. A perusal of these papers lets one see very clearly where we now stand with regard to our knowledge of the morbid anatomy, pathogenesis, epidemiology, symptomatology and treatment of this disease.

Strauss discusses the pathology of the disease and its bearing upon the symptoms in a paper beautifully illustrated by microphotographs. One of the points brought out is the constant involvement of the pia, and of the nerve roots and root ganglia, a condition which accounts for the irritative symptoms met with in the early stages. The process in the cord itself depends primarily upon vascular changes, and secondarily upon changes in the cells, both ganglionic and interstitial. The anterior horn ganglionic cells seem to have a special affinity for the virus, although none are immune to its action; but it must be remembered that the morphological appearances are not always a certain sign of their functional activity. The disappearance of the extensive paralysis which is often present is probably due to a subsidence of the inflammatory oedema which has interfered with the conductivity of the fibres.

Flexner has a paper on experimental poliomyelitis which we need not further refer to, as abstracts of most of his work with Lewis have already been published in this *Review*. In the absence of more convincing knowledge, however, he advises that the naso-pharynx should be regarded as the part of the body most concerned in the dissemination of the virus.

Three papers deal with individual small epidemics or collections of cases. That by Dr Armstrong is a well-worked-up epidemic of 17 cases in a village in Minnesota. Good evidence is afforded of the contagious nature of the disease, and it is pointed out what an important part abortive cases, which would pass unrecognised save in an epidemic, may play in the spread. Dr C. K. Russel contributes notes based on the observation of 38 cases in Montreal, with autopsy findings in two cases, one of them an adult; while Dr Anderson reports on an epidemic of 279 cases in Nebraska. Papers by Drs Coulter and Fowler are in the nature of summaries, that by the latter being an expanded form

of the summary which appeared in the *Edinburgh Medical Journal* in May 1909.

G. P. Shidler pleads wisely for the abolition of "Infantile Paralysis" as a synonym for "Poliomyelitis," seeing that there is not necessarily paralysis, and it need not be infantile.

The last paper, by Kerz, is the only one dealing purely with treatment, and it is limited to a consideration of the various surgical measures available for the relief of the permanent paralysis and of the deformities which should not, but do occur. His paper is a good practical one, based on experience with a number of cases in the Australian epidemic.

J. H. HARVEY PIRIE.

THREE LECTURES ON EPILEPSY. By WILLIAM ALDREN TURNER.
Edinburgh: John F. Mackenzie, 1910. 3s. 6d.

THIS book of sixty-three pages forms the gist of the Morison Lectures recently delivered before the Royal College of Physicians of Edinburgh. The first lecture is devoted to the problem of epilepsy, the second to the borderline of epilepsy, and the third to its treatment. The latter is very fully discussed both as regards dietetic, medicinal, and general management. The author has found Gélinau's combination of bromide, picrotoxin, and arseniate of antimony the most valuable method, yielding, as a rule, more successful results than any single bromide, being less likely to lead to troublesome symptoms, and being easy of administration. Full details as to the modes of employing bromides and other drugs are given.

The work, although brief, is certain to be of use in advancing the management of the treatment of epilepsy.

LES NÉURALGIES ET LEUR TRAITEMENT. FERNAND LÉVY et
A. BAUDOUIN. Paris: Baillière et fils, 1910. 1 fr. 50.

THIS volume, which forms one of the collection known as "Les Actualités Médicales," gives, in a scope of ninety-five pages, an account of the various forms of neuralgia and their treatment. The treatment by the modern methods of injection is considered in detail, its technique being carefully described and illustrated by figures in the text. The work forms a handy book of reference, and should prove of special use to the general practitioner.

ÜBER NERVÖSE DYSPEPSIE. Psychiatrische Untersuchungen aus der Medizinischen Klinik zu Heidelberg. GEORGES L. DREYFUS. Jena : Gustav Fischer, 1908.

THIS is a valuable work of 100 pages, in which the subject of nervous dyspepsia is discussed from its historical and clinical aspects. It deserves careful study, as it contains an exceedingly full account of the effect of states of anxiety, depression, etc., upon the function of digestion. The author deals (1) with the various conditions known as nervous dyspepsia: (*a*) those in which its symptoms are due to psychopathy; (*b*) those in which it has a mental cause (psychogenic dyspepsia)—as in the traumatic neuroses, etc.; (*c*) those caused by hysteria; and (*d*) cyclothemic dyspepsia, i.e. dyspepsia occurring during the weakened, melancholic, and maniac phases of manic-depressive insanity; (2) with acquired neurasthenia showing dyspeptic symptoms; (3) with nervous dyspepsia caused by pathological changes in the gastric nervous system; and (4) with the group of symptoms caused by disturbances of the internal secretion. Under each of these headings the questions of diagnosis, prognosis, and treatment are fully considered, and the conclusions are concisely stated at the end of the volume. The author insists upon the necessity for a full appreciation of the nervous element and for careful exclusion of all organic disease. A very full bibliography is appended to this interesting contribution to the subject of nervous dyspepsia.

BOOKS AND PAMPHLETS RECEIVED.

C. K. Mills. "The Sensory Functions attributed to the Seventh Nerve" (*Journ. Nerv. and Ment. Dis.*, May and June 1910).

Langdon. "Radiculitis" (*Journ. Nerv. and Ment. Dis.*, Aug. 1910).

Karl Rühl. "Cesare Lombroso." Halle: Marhold, 1910. M. —75.

H Oppenheim. "Über die pseudotabische Form der multiplen Sklerose" (*Neurol. Centralbl.*, Nr. 20).

H. Oppenheim. "Über einen bemerkenswerten Fall von Intoxikations-erkrankung der Nervensystems (chronische Arsen-Antimonvergiftung?)" (*Ztschr. f. d. ges. Neurol. u. Psychiat.*, Bd. 3, H. 3).

Sachs and Strauss. "The Cell Changes in Amaurotic Family Idiocy" (*Journ. Experiment. Med.*, No. 5, 1910).

Pediatrics, Aug. 1910.

Léon Vouters. "Sur l'Agnosie Tactile." Paris: Steinheil, 1909.

Review of Neurology and Psychiatry

Original Articles

THE HISTOLOGICAL EVIDENCE THAT TOXINS REACH THE SPINAL CORD VIA THE SPINAL ROOTS; WITH SPECIAL REFERENCE TO PLASMA CELLS.

By DR ORR, County Asylum, Prestwich ; and
DR ROWS, County Asylum, Lancaster.¹

THIS paper deals with further investigations into the course of the lymph stream in nerves, and the effects upon the central nervous system produced by toxic invasion along this channel. Our attention was first directed to this subject by observing the lesions in the posterior columns and other regions of the human cord which occurred secondarily to toxic absorption along the nerves implicated in septic foci, and this observation was confirmed by the production of similar lesions by experiment in lower animals. An account of these experiments will be found in the *Review of Neurology and Psychiatry*, May 1907, as well as references to the literature of the subject, a study of which shows in a most conclusive manner that the ascending lymph stream in nerves is a path along which infection of the brain or cord can readily occur. Since our last publication our observations have been mainly confined to material derived from

¹ Towards this research the British Medical Association has assisted by a grant of money.

experiments on rabbits and dogs, but in this series instead of studying the lesions produced in the central nervous system we have devoted our entire attention to the histological reaction induced by the toxins in the lymph stream as they are carried up the nerve, past the posterior root ganglia, and along the spinal roots towards the cord. These observations have served a double purpose. They have not only provided definite objective evidence of the presence of toxins in the lymph stream between the source of infection and the cord—and thus supplemented our former experiments—but have shown us what changes are induced in the nervous system by lymphogenous infection.

The possibility of infection of the nervous system by the lymph path has not received as much attention as it would seem to merit, probably on account of our imperfect knowledge of the whole lymphatic system of the brain and cord. But recent investigations in many directions tend to show that the view which holds the blood stream responsible for some nerve lesions of an infective nature will require to undergo revision, and may in time be discarded entirely. One notable example is that of poliomyelitis anterior acuta, firmly regarded by the large majority as of hæmatogenous origin, and yet a perusal of Wickman's work on the subject renders such an opinion practically untenable. To cite another example, that of general paralysis of the insane, of whose chronic inflammatory nature there can be little doubt, we find in this disease that the pathological changes in the vessels and supporting tissues are not comparable with the lesions resulting from a general blood infection: and in this connection we might also mention the equal impossibility of admitting a hæmatogenous source for the causative agent of tabes dorsalis. To most minds the rigidly systemic character of the lesion precludes any such conclusion.

In a short paper published in the *Journal of Mental Science*, July 1908, we pointed out what seemed to us reasonable grounds for dividing chronic lesions of the fibres of the posterior columns into those of lymphogenous and those of hæmatogenous origin; and gave as an example of the first, tabes, and of the second, the sclerotic change found in Addison's disease, pernicious anæmia, visceral cancer, etc. The fact that the sclerosis in tabes commences in the root entry zones, and that of general

intoxications around the postero-median septum, made us feel that a common mechanism of etiology could not be admitted for anatomical reasons. It will be apparent then that investigations in this direction must include both lymphogenous and hæmatogenous systems, and as regards the former, observations in both the human subject and lower animals have shown us already that toxins spreading into the posterior columns along the roots attack the fibres of the root entry zones first.

The whole question, however, presents innumerable difficulties, and all we can hope to show from our experiments at present is that toxic infection of the lymph of a nerve induces changes which are histologically similar with the vascular phenomena found in general paralysis of the insane; and that, if we admit the inflammatory nature of this disease, there are indications that a study of the cerebro-spinal fluid and of the lymph currents in the central nervous system will be of more profit than an examination of the constituents of the blood, which up to the present time, it must be admitted, has proved futile.

The method adopted in this second series of experiments was precisely similar to that previously employed, and consisted in placing a sealed celloidin capsule containing a broth culture of an organism under the gluteus muscle of rabbits and dogs and in contact with the sciatic nerve. The animals were allowed to live for a variable period up to one month, and we used three organisms, viz.: staphylococcus aureus, a diphtheroid bacillus from a case of general paralysis, and the bacillus botulinus. The toxins from all three organisms induced histological changes in the nerve, and these were found to be similar in each instance. At the commencement of our experiments we found some difficulty in preventing the capsules from bursting, as a result possibly of movements on the part of the animal, but by using a small capsule we reduced accident to a minimum, and obtained tissue free from suppuration. It is from the latter that the description of the pathological changes in the nerve are drawn, but we have added some points of interest and difference from the suppurative cases which seem of importance to us, and have some bearing on the questions arising with regard to the cell reaction induced by different degrees of stimulation.

After the tissue had been preserved in 10 per cent. formalin for at least fourteen days, longitudinal sections were taken of the sciatic nerve in its whole length, and of the lumbo-sacral ganglia with the anterior and posterior spinal roots attached. In addition, a portion of the celloidin capsule with the nerve adherent to it was embedded in paraffin, cut in transverse section, and the sections fixed on albuminised slides. It is with these transverse sections, stained either with toluidin blue alone or counterstained with weak erythrosin, that our description commences, and it will deal consecutively with the inflammatory exudate around the capsule, then with the changes in the epineurium and perineurium, then with the signs of irritation in the nerve, and finally with those in the spinal roots and posterior root ganglia.

In an experiment of ten days' duration the inflammatory exudate varies in thickness from one point to another around the circumference of the capsule, and binds the nerve fairly firmly to it, so that there is no difficulty in maintaining the true relationship of one to the other in section (Photo 1). This exudate is composed of definite layers. In the first, lying next to the capsule, there are a large number of polymorphonuclear leucocytes mixed with numerous cells possessing a very scanty amount of protoplasm and a faintly stained oval nucleus of medium size containing little or no chromatin (Photo 2). Many of these clear nuclei show a considerable degree of distortion; others occupy an excentric position in a cell body of fair dimensions. Excentricity of the nucleus is frequently associated with diminution of its size. The first layer is sharply divided from the second, which is of nearly uniform thickness all round the capsule and is composed almost exclusively of typical fibroblasts (Photo 2). At the margin next the first layer there are small round basophile bodies suggestive of degenerated polymorphonuclear leucocytes; at its opposite margin there are a few cells like small lymphocytes, some clear oval nuclei with little chromatin, and some young fibroblasts whose nuclei though elongated are still oval in contour. This fibroblast layer is intimately connected with the epineurium, in which the inflammatory phenomena are very obvious even with a low magnification.

The character of the cellular reaction changes immediately

1

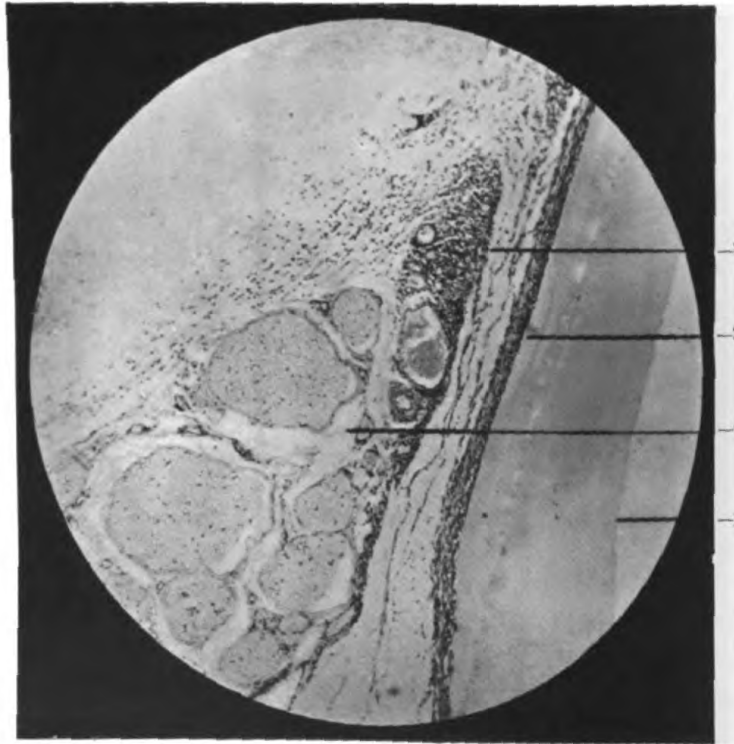


PHOTO 1.

1. Celloidin capsule cut in transverse section.
2. Layers of exudate.
3. Granulation tissue in epineurium.
4. Fasciculi of sciatic nerve.

To illustrate Paper by Drs Orr and Rows.

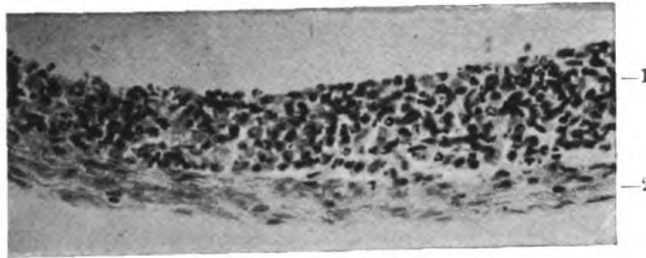


PHOTO 2.

1. Polymorphonuclear leucocytes mixed with large clear nuclei.
2. Fibroblast layer.

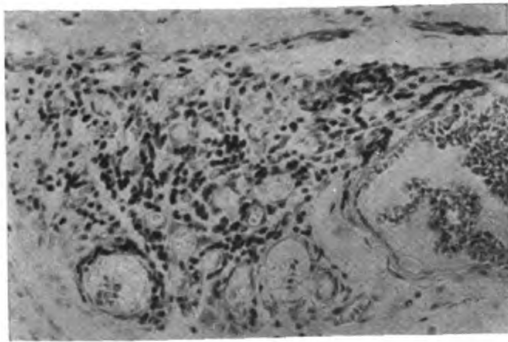


PHOTO 3.

Granulation tissue in epineurium.

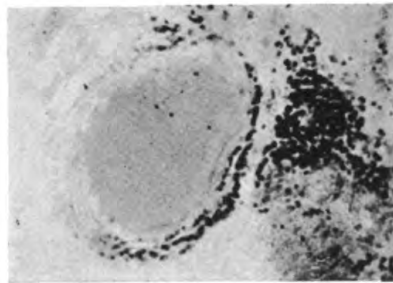


PHOTO 4.

Small round cells in adventitial sheath of vein.

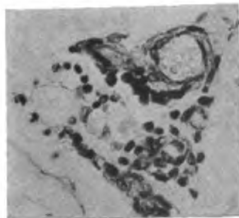


PHOTO 5.

Young plasma cells round venules in epineurium.

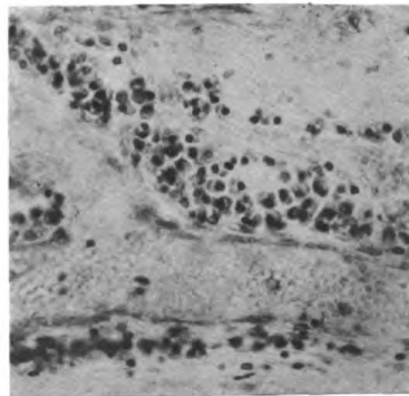


PHOTO 6.

Typical plasma cells developing round a vein. Note there is no proliferation of the intima.

the line between the fibroblast layer and the highly vascular epineurium is crossed. In the epineurium there are collections of cells seen around the capillaries and veins, and amongst the proliferated tissues of this sheath there are groups of newly formed vessels (Photo 3). On examination with high powers the adventitial sheath of the veins is seen to be infiltrated with small round cells with a deeply stained nucleus (Photo 4). Many cells of this type surround the smallest vessels and lie free in the intervening tissue. In some, the protoplasmic body is indistinguishable, in many, however, there is a faintly stained narrow ring of protoplasm; in others again the cell body is quite distinct, stains a violet colour, and the nucleus occupies an excentric position. Around some capillaries and veins there are typical young plasma cells with a round excentric nucleus, a violet vaguely granular protoplasmic body, and a distinct crescentic halo at the central side of the nucleus (Photo 5); and as we shall have to note the presence of these plasma cells frequently, it will be advisable to define what we mean by the term. Reference to Photo 6 will show examples of the cell in question. The body as a rule is round, but may be fusiform or cubical according to pressure of numbers or the density of the tissue in which they are situated; the protoplasm stains of a blue or blue-violet colour, and we agree with Nissl that while not distinctly granular, still it is not homogeneous. There is a halo of varying size at the central side of the excentric oval or round nucleus, in which strongly staining chromatin particles may be uniformly distributed, or be arranged in a ring round the periphery.

In the areas of new vessel formation there are many cells with a large clear oval nucleus lying amongst the round cells mentioned above. Sometimes they have no visible cell body, but in the majority there is a scanty amount of protoplasm which stains very lightly. In a few, however, it is more evident and is drawn out at both ends of the cell as a fine thread, giving an appearance highly suggestive of developing fibroblasts.

If the corresponding tissues of an experiment of twenty days' duration are examined, confirmation of the above observations with some slight differences will be found. In the polymorphonuclear layer next to the capsule the protoplasm of the cells

with clear oval nuclei is much more in evidence ; in some the cell body shows a reticular structure and the nucleus is often irregular in outline. In the second layer the transition from young to adult fibroblasts is very well seen, as shown by the progressive flattening and elongation of the nucleus, until it is recognisable only by the highest magnification, and by the marked increase in length of the protoplasmic body. On the side of this second layer next the nerve there are groups of cells which are very similar in appearance to the reticulate cells found in the polymorphonuclear layer, and scattered amongst them are a few fibroblasts. These cells, which are apparently undergoing regressive changes, have a large faintly stained often markedly reticular cell body ; and in some the nucleus is large, pale, and irregular in outline, while in others it is much diminished in size, stains deeply, and occupies an excentric position.

In addition to cutting the nerve and capsule in transverse section, the nerve was carefully stripped off and cut longitudinally ; this procedure allowed of a much more accurate estimation of the degree of inflammatory reaction in the epineurium. On the tenth day this very vascular tissue shows a remarkable degree of inflammation, most marked around the veins and capillaries, against whose walls there are many nuclei closely packed together (Photo 7). These proliferated nuclei can be divided into two kinds, small round and deeply stained, and contrasting strongly with these, large and pale with fine granules of chromatin. The majority of the pale nuclei are oval in shape and regular in outline, but in some the nuclear membrane is indented, in others the outline is irregular ; pear-shaped and elongated varieties are not uncommon. The round darkly stained nuclei occur in very large numbers, and amongst them there are plasma cells in all stages of development. The body of many of these plasma cells does not stain quite so well as it should normally, and occasionally some are seen in a regressive phase with a pale hyaline-looking body and a very deeply stained crenated nucleus. The intima of the vessels around which this cell proliferation is found is comparatively free from irritative phenomena ; these when present consist in swelling of the endothelial nuclei which may project into the lumen of the vessel, or, when actually detached, lie free in it (Photo 8). Occasionally the vessel contents show

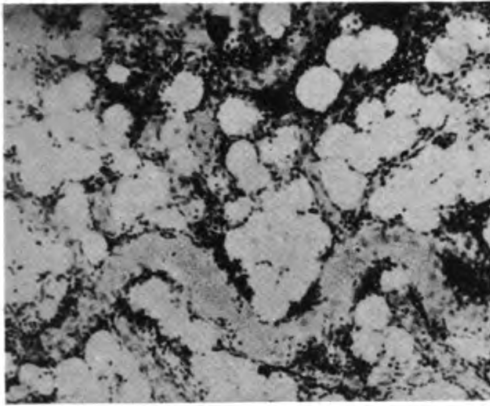


PHOTO 7.
Inflammatory reaction round veins in
epineurium.

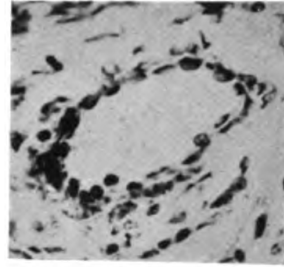


PHOTO 8.
Swollen cells of intima pro-
jecting into lumen of
vessel.

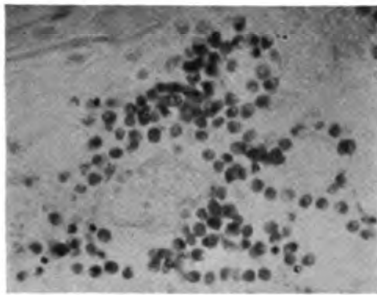


PHOTO 9.
Plasma cell formation in areolar
spaces of epineurium.

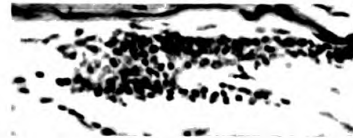


PHOTO 10.
Longitudinal section, showing pro-
liferation of adventitia.

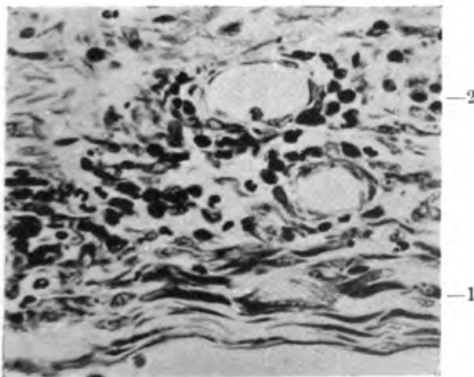


PHOTO 11.
1. Inner layer of perineurium.
2. Plasma cells.

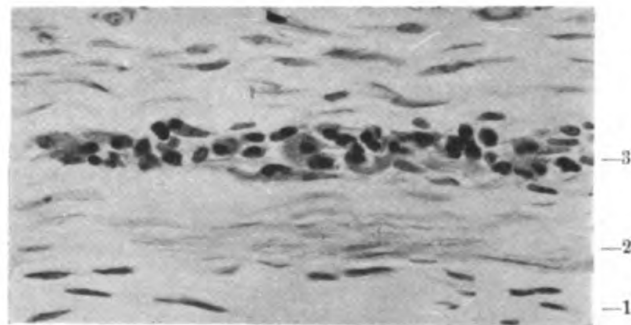
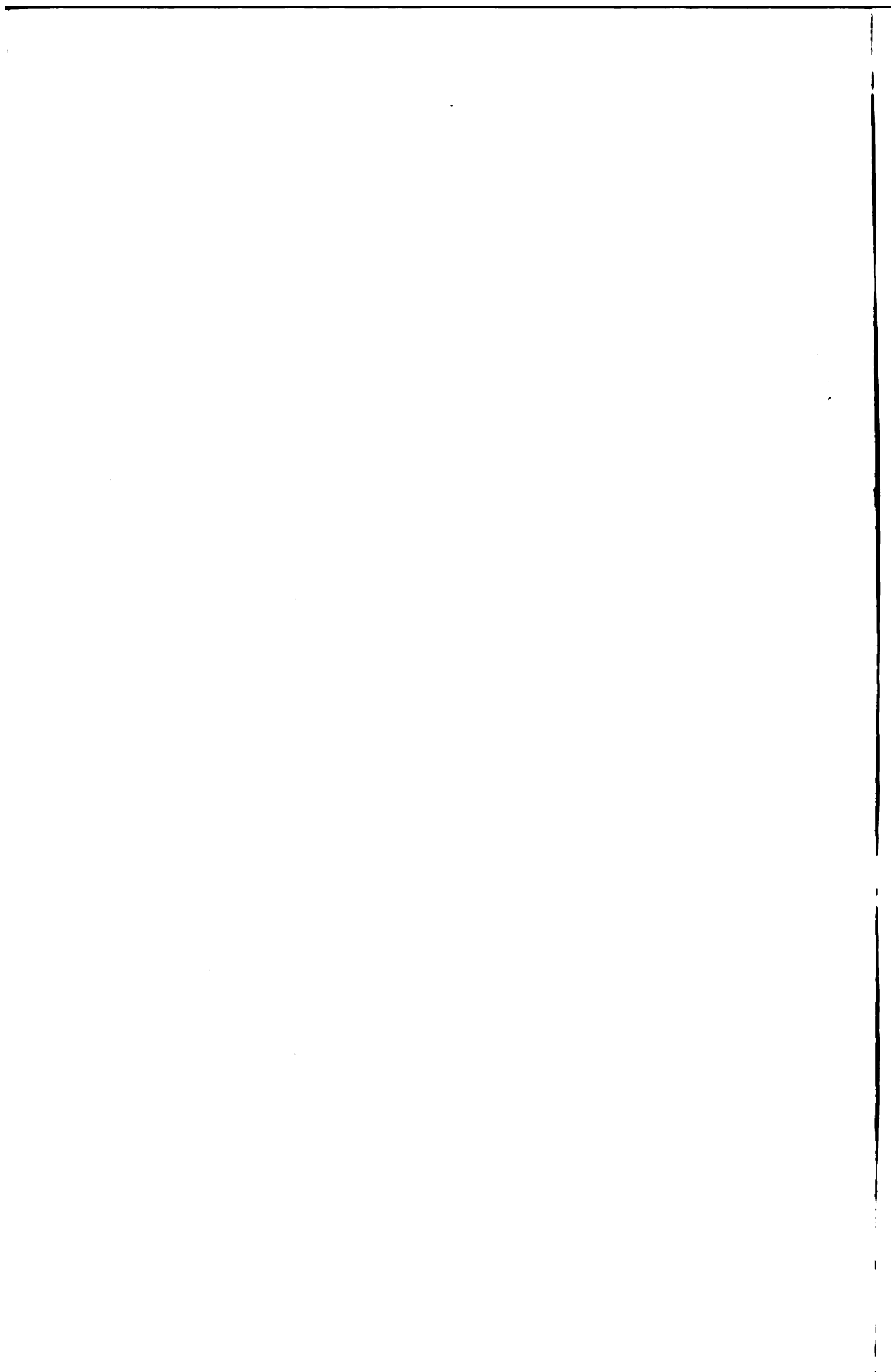


PHOTO 12.
1. Nerve.
2. Inner layer of perineurium.
3. Plasma cells in adventitial sheath of a capillary.



a certain degree of reaction and small collections of polymorpho-nuclear leucocytes and lymphocytes have been seen lying at the periphery of the blood stream; with this exception, however, there is no evidence of participation of the hæmatogenous elements in the inflammatory process. The connective tissue nuclei of the areolar reticulum are pale, swollen and distorted, and there are plasma cells lying not only free in the spaces but amongst the swollen nuclei lining them (Photo 9). If the longitudinal section happens to pass through the adventitial coat alone a better conception of the degree of proliferation in this sheath is obtained than if the section passes through the lumen (Photo 10). The adventitia is seen to be filled with a mass of cells with large clear nuclei of almost every describable shape, and with plasma cells in all stages of transition. In some of the latter the protoplasmic body is quite typical of this variety of cell, but the nucleus, though excentric, is oval and clear—in fact, indistinguishable from a reacting adventitial nucleus. There are other plasma cells of a more elongated type somewhat resembling fibroblasts, but easily separable by their morphological characters.

There is a considerable degree of proliferative change in the perineurium which is densely crowded with clear nuclei of varying shape containing a few isolated chromatin granules; some are round or oval, some very irregular in outline, and some long and narrow. The nuclei lining the inner layers of the perineurium show least change, and many of them are quite normal in appearance (Photo 11). Amongst these proliferated nuclei are many plasma cells whose shape is not at all uniform, very possibly on account of the pressure exerted by the dense lamellar tissue of the perineurium. It is not unusual to find many of triangular outline, and quite a number are markedly elongated. All however show the characteristic vaguely granular body with the halo. Some of these plasma cells occur singly, or there may be little groups of three or four; others, again, form a single or double row of ten or twelve elements, as if arranged along the course of a capillary (Photo 12); in the adventitia of the venules they are a constant feature. The adventitia of the venules always shows proliferative changes, while the endothelium is almost constantly normal.

If a nerve be examined which has been in contact with a capsule containing organisms for twenty days the difference

between the inflammatory phenomena in the epineurium and perineurium is very distinct. In the epineurium there are large collections of round or oval nuclei of medium size, not all of which are stained with equal intensity. At the edge of these collections, and scattered throughout the tissue, there are many typical plasma cells, and many which are evidently in a regressive phase. In some of the latter both the nucleus and the cell body are pale, the halo is still perceptible, but the rest of the cytoplasm is uniformly granular and at the edge of the cell irregular. Occasionally at this stage some of the cells have a vaguely reticular appearance. Side by side with these plasma cells are numerous clear hyaline reticular cells with a small excentric nucleus frequently deeply stained. The meshes of the reticulum are wide, and the cells themselves vary in size from a little larger than a plasma cell to twice or three times its dimensions. There are also young fibrous tissue cells present. Plasma cells are very numerous in the perineurium; the nuclei of the connective tissue are swollen and pale and show only traces of chromatin. Around these nuclei, which are oval for the most part, there is a small quantity of faintly stained protoplasm which tapers away to a point at either end. Many plasma cells also are present in the adventitia of the veins which lie close to the nerve and pass into the septa between the nerve bundles; morphologically they are typical, and are arranged in rows along the adventitia, whose nuclei are proliferated and stain rather feebly.

There is a very appreciable diminution in the degree of inflammatory reaction in the sheath of the sciatic nerve at a point one inch above the upper end of the capsule (Photo 13). The reactive changes in the epineurium are very much less here than was seen where the nerve was in contact with the capsule. There are many proliferated nuclei, but their distribution is not uniform; they form small collections at intervals, and are almost all oval in shape. It is rare to find plasma cells lying free in the areolar spaces. The cells of the adventitia of the veins are swollen, proliferated, and in the majority of instances oval in outline. Many plasma cells in all stages of development are scattered amongst them, but though morphologically typical they are not quite so large as the plasma cells found where the nerve overlies the capsule (Photo 14). Their protoplasm is

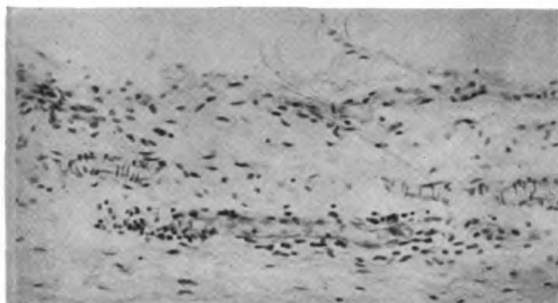


PHOTO 13.

Section one inch above the capsule. Compare with photo 7.

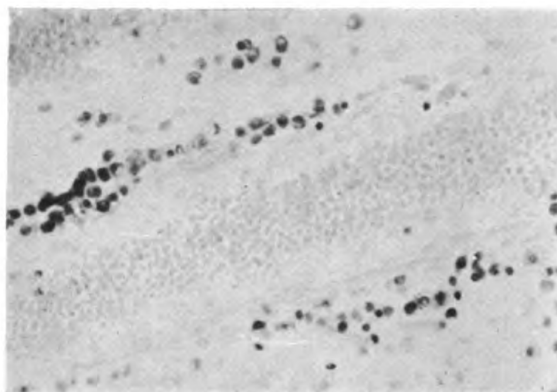


PHOTO 14.

Section one inch above the capsule: plasma cells in adventitia of vein.

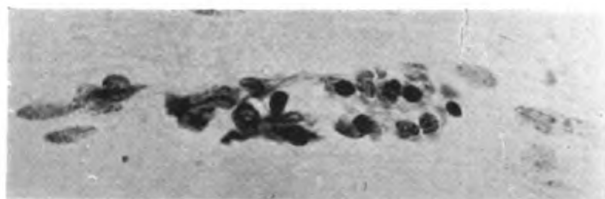


PHOTO 15.

Capillary within nerve: proliferation of adventitia and early plasma cell formation.

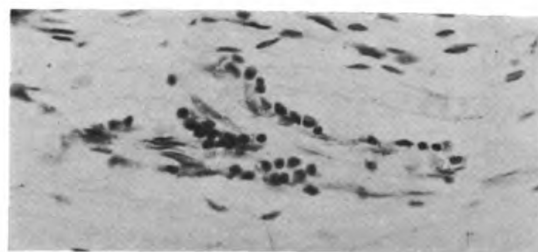


PHOTO 16.

Capillary within nerve: groups of plasma cells.

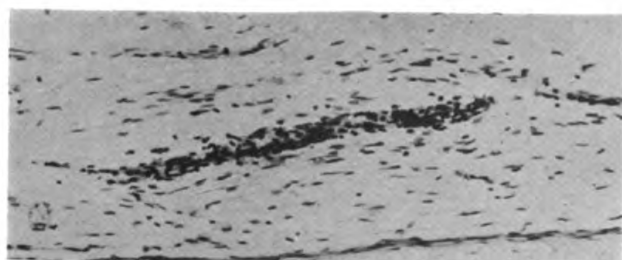


PHOTO 17.

Capillary within nerve: proliferated adventitial cells.



PHOTO 18.

Capillary within nerve: plasma cells arranged in rows.

often very scanty, the halo narrow, and might be better described as a perinuclear ring; and the contour of the cytoplasm is frequently very irregular. Where several are in apposition their shape is cubical rather than round, but in all the vaguely granular cell body stains of a blue violet colour, and in many the chromatin particles of the nucleus are arranged around the periphery of the membrane, an appearance said to be typical of the plasma cell. The position of the nucleus of these cells is here just as often central as excentric. Lying near them are to be seen round nuclei rich in chromatin, some of which possess no visible cell body, while others show the merest trace. The endothelial cells of the veins are frequently swollen.

Turning now to the vessels situated within the nerve fasciculi we find that the veins and capillaries show much less change in this situation than in the epi- and perineurium. The inflammatory reaction is not only much less quantitatively, but is of a more sub-acute character, such as would be induced by an exciting agent of less potency than that which caused the changes in the epineurium. The reaction in the capillaries is not equal in all, and varies within fairly wide limits. A slight degree of swelling or distortion of the adventitial nuclei is not uncommon, and along the outer margin there are round deeply stained nuclei, some with no visible cell body and others possessing a small quantity of cytoplasm (Photo 15). In other vessels, however, the reaction, though still slight, can be seen to have attained greater proportions. The adventitial nuclei are more swollen, and the small round dark nuclei so increased in number as to form small groups (Photo 16). Around some of these there is a moderate quantity of vaguely granular protoplasm, the nucleus is central, and is surrounded by a narrow perinuclear space. Often the endothelial nuclei show a considerable degree of swelling. At a more advanced stage of the inflammatory process there is in some vessels well-marked proliferation of the adventitial nuclei with a slight degree of typical plasma-cell formation (Photo 17), while in others the development of plasma cells is the predominant feature; this seems to occur with preference in connection with the finest vessels. The plasma cells are, as a rule, arranged in a row along the vessel wall, each cell in close apposition with its neighbour, and all phases of transition can be seen from the youngest to the mature forms (Photo 18).

Where these cells are in close apposition their form is markedly cubical.

In the sensory ganglia and spinal roots of the lumbo-sacral enlargement there are all the signs of irritation already described, and they have been observed in some cases as high as a point one inch proximal to the ganglion. The nuclei of the cells of the perineurium are somewhat swollen and in places increased in number, and around the veins there are groups of plasma cells. These are present also in the adventitial coat, whose nuclei show proliferative changes. A group of fully developed plasma cells is often seen at the proximal pole of the ganglion, just where the anterior and posterior roots diverge. Their relation to a vein can be seen in some sections, and it is not unusual to find extravasated blood corpuscles in the same situation. The capillaries of both roots, of the stump of mixed nerve on the distal side of the ganglion, and of the ganglion itself, show the same changes as described in the fasciculi of the sciatic nerve. There is proliferation of the adventitial nuclei, and plasma-cell formation in all its phases. The proliferated adventitial nuclei may be round or oval, and occasionally in some of them the chromatin is arranged round the circumference of the nuclear membrane, an arrangement reminiscent of that in the plasma-cell nucleus. Here and there, and especially on the proximal side of the ganglion, a small segment of the myelin sheath of a nerve has disappeared, leaving a clear space in which the axis-cylinder, swollen at times, lies bare surrounded by a few reticulate cells morphologically identical with Nissl's "Gitterzellen."

Chromatolysis of the nerve cells of the ganglion is very rare. The cells stain well, and as a rule the chromophile elements preserve their normal characteristics (Photo 19). Very occasionally examples of peripheral chromatolysis are seen, and vacuolation of the cell body is not more frequently found in this series of experiments than in presumably healthy animals. The nuclei of the nerve-cell capsule are proliferated and greatly increased in numbers; many of them have invaded the outer zone of the nerve cell.

SUMMARY

If we summarise the cellular changes induced by these experiments, we find a very definite reaction in the whole course

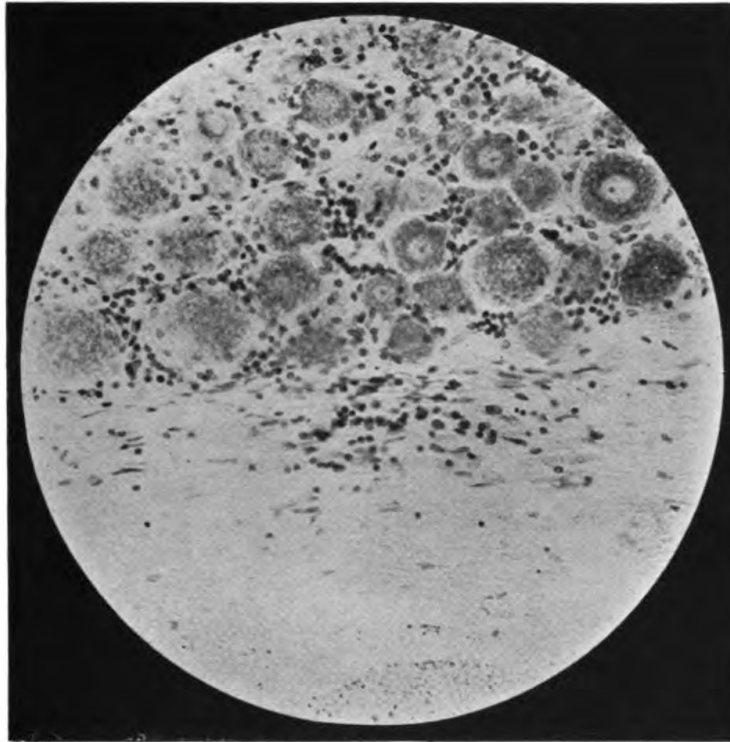


PHOTO 19.

Note the slight degree of chromatolysis and proliferated capsular cells.

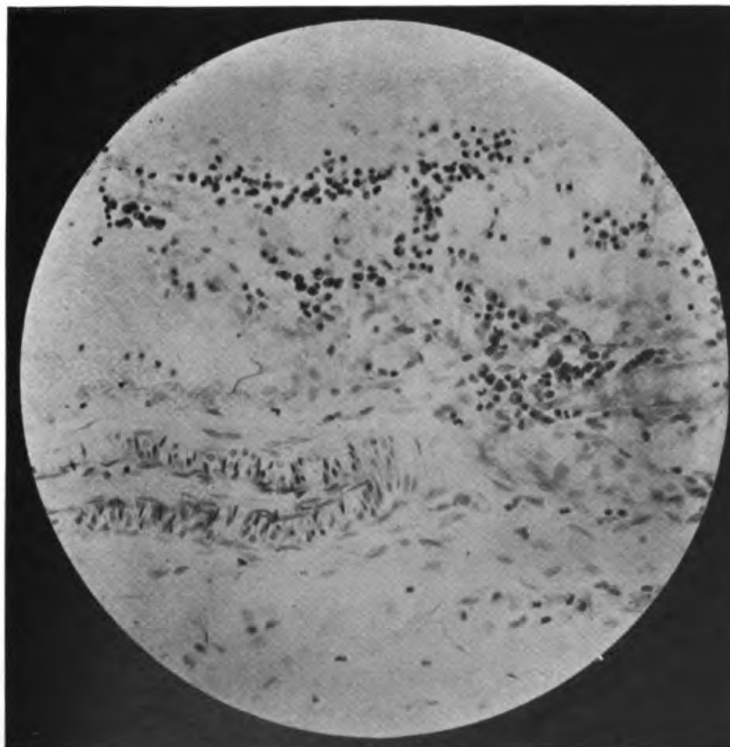


PHOTO 20.

1. Arteriole.
2. Venule surrounded by plasma cells.

To illustrate Paper by Drs Orr and Rows.

of the sciatic nerve, through the posterior root ganglia, and along both anterior and posterior spinal roots. The toxins induce inflammatory phenomena in the fixed tissues, such as the epineurium, the perineurium, and in the veins and capillaries both outside and inside the nerve; no reaction has been observed in connection with the arterioles (Photo 20). There is a marked diminution in the severity of the inflammation so soon as the immediate neighbourhood of the toxic focus is left. The hæmatogenous elements do not participate in the inflammation, and the very slight involvement of the endothelial cells of the intima is noteworthy.

To put our results in brief form, we have, starting from the capsule :—

1. A layer of polymorphonuclear leucocytes mixed with large clear nuclei.

2. Adult and developing fibroblasts amongst which are clear nuclei similar to those in layer 1.

3. In the epineurium new vessel formation, clear nuclei of proliferating adventitia, round darkly staining nuclei, and plasma cells in all stages of development.

4. In the inner layers of the perineurium a marked diminution in the degree of inflammation. The cells of the lamellæ show proliferative changes; there are many plasma cells.

5. One inch above the capsule there is much less reaction in both epi- and perineurium.

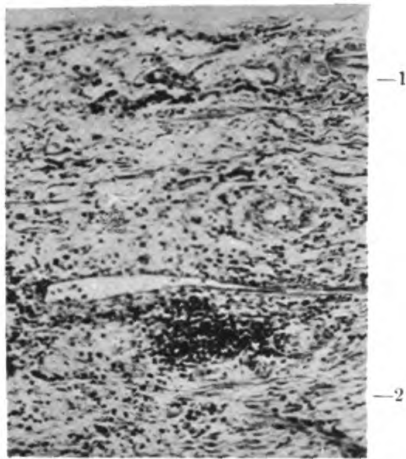
6. Within the nerve where it lies on the capsule, and above it, the inflammatory phenomena are very slight as compared with those in the nerve sheath. Plasma-cell formation, especially in connection with the capillaries, is the most prominent feature. Similar vessel changes are seen in the posterior root ganglia and both spinal roots.

7. In the polymorphonuclear layer, and in the epineurium, there are many reticulate cells. Many plasma cells in a regressive phase with a pale hyaline body and a crenated nucleus are also found in the epineurium.

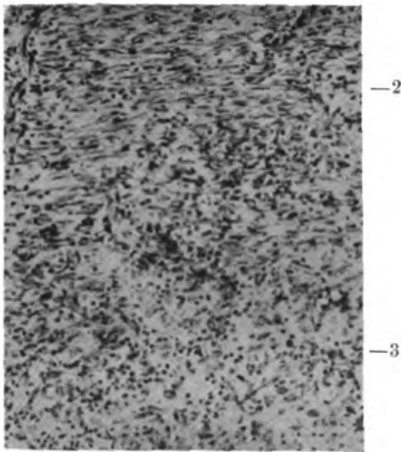
There is one important fact to which we would draw attention, and that is how plasma-cell formation becomes the most prominent indication of irritation in those regions where there is reason to presume that the toxin has been to a great extent neutralised by the reaction of the tissues.

The reaction of the tissues in the cases in which the capsule had burst and a growth of organisms had occurred outside differs considerably from that seen in the first series. In the cases with suppuration the reaction at the level of the capsule is very intense (Photo 21). In place of the normal comparatively thin epi- and perineural sheaths, there are several rows of the proliferated cells of these sheaths having a more or less parallel arrangement nearest the nerve but more scattered further out; amongst these lie the vessels within whose walls a rapid multiplication of cells is taking place. Outside these sheaths there is a broad band of fibroblasts arranged in parallel rows. Then between this band of fibroblasts and the capsule is a layer containing groups of organisms, polymorphonuclear leucocytes, many of them degenerating, and cells with a large clear nucleus and a varying quantity of protoplasm, all lying in a homogeneous unstained matrix.

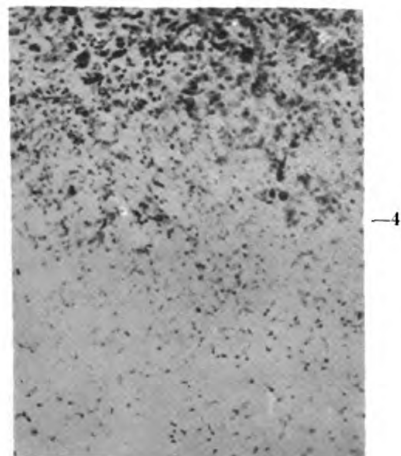
With increased magnification the characters of these newly formed cells can be more accurately observed. Photo 22 shows the cells still with a laminar arrangement close to the nerve, but becoming more irregularly scattered further out. In the part near the nerve the cells are elongated and swollen; the nucleus is usually pale, and the protoplasm lies at each end of the nucleus in the form of a long process. In the outer portion the cells assume a great variety of shapes (Photo 32). Some maintain the elongated form already mentioned; in others the protoplasm surrounds the nucleus, or the nucleus may be excentric and the protoplasm lie on one side of it. In both cases the protoplasm shows no definite edge, and is sometimes extended into one or more processes. Outside the epineurium these intermediate stages of developing fibroblasts become less evident, and the cells are again elongated and have a little protoplasm streaming from each end of the fusiform nucleus. The irregular arrangement ceases and the cells lie in parallel rows (Photo 21 B). In this band of fibroblasts a large number of new vessels are present, and some of them extend across from the epineurium and enter the layer of tissue between this band and the capsule. Their walls are formed of one or more layers of elongated cells with a pale fusiform nucleus and a certain amount of protoplasm spreading from each end. Some of the cells which form the wall of these new-formed vessels are undergoing active proliferation, and here



A



B



C

PHOTO 21 (A, B, C).

Photograph of layers of inflammatory reaction between capsule and nerve.

1. Perineurium containing plasma cells.
2. Fibroblasts in parallel rows.
3. Fibroblasts loosely arranged.
4. Degenerated polymorphonuclear leucocytes and organisms.

To illustrate Paper by Drs Orr and Rows.

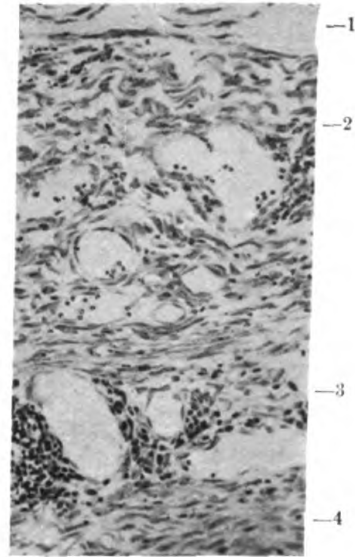


PHOTO 22.

1. Nerve.
2. Perineurium.
3. Epineurium.
4. Parallel rows of fibroblasts.

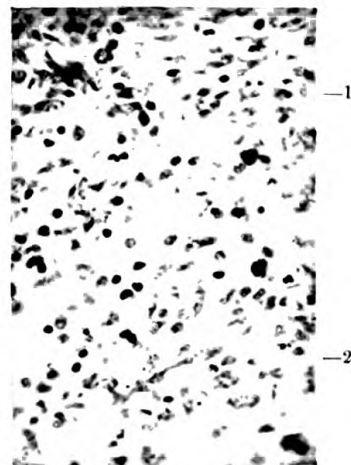


PHOTO 23.

High power photograph from centre of photo 21 B.

1. Parallel rows of fibroblasts.
2. Loose arrangement of fibroblasts.

and there wander into the surrounding tissues (Photo 31). Amongst these proliferated elements some are round with a pale nucleus and a varying quantity of protoplasm; others are smaller, more deeply stained, and have very little protoplasm. In the zone between the band of fibroblasts and the capsule (Photo 23) the cells do not stain so deeply, they assume a great variety of shapes and form a much more open tissue. In this area of maximum reaction very few plasma cells are present, and when present they are found only in the neighbourhood of the vessels of the epineurium. In the coats of these vessels there is such a high degree of cell multiplication that the details are obscured.

In sections of the nerve a little higher up proliferation of the cells of the epi- and perineural sheaths with the formation of fibroblasts is still going on, but is less active than below. The fibroblasts exhibit the same forms as in the other sections but they are less crowded together and the arrangement in parallel rows has ceased. The cell proliferation in the walls of the vessels is a striking feature, but it is limited practically to the veins and capillaries. The arteries, even in the area of maximum irritation, are as free from reaction as the arteriole shown in Photo 20. In the veins and capillaries the signs of irritation are evident, but are more pronounced in the adventitial sheath. The cells of the endothelium are swollen; most of them have a pale fusiform nucleus with protoplasm at each end. In some vessels they are rounded and project into the lumen to such an extent in some cases as to be almost detached from the wall (Photo 8 and 24). The whole cell stains more deeply than normal, and the colour becomes more intense in those which are more round. In some instances multiplication by direct division may be observed, and, as in the vessel seen in Photo 24, this process may proceed to such an extent as to lead to a mingling of these cells with the proliferated cells of the adventitia, so that it is no longer possible to distinguish the one from the other. This difficulty occurs frequently in the capillaries, where it may be impossible to discriminate between the swollen endothelial and adventitial cells (Photo 8). The elements of the adventitial sheath have greatly increased in number; they have pale oval nuclei, and the protoplasm may extend outwards from each end of the nucleus or may surround it. Some of the cells acquire the characters of fibroblasts, and can be seen separating themselves

from the vessel wall and spreading into the mass of fibroblasts. But in the outer layers of the proliferated adventitia another type of cell is found (Photo 26). In these the nuclei are more rounded and more deeply stained; their chromatin is sometimes distributed through the nucleus, but may be collected in granules around the nuclear membrane. The protoplasm varies in quantity and in disposition. Sometimes there is very little, which may lie at one side of the nucleus or may surround it, and be separated from it by a clear band. Other cells possess all the morphological characters of the adult plasma cell, with an eccentric nucleus and a halo on its central side which is bounded peripherally by a varying amount of vaguely granular protoplasm. These typical plasma cells and all the intermediate stages of development occur in large numbers in the sheaths of the veins and capillaries of this portion of nerve. They are also found amongst the connective tissue cells, and many of the areolar spaces of the epineurium are limited by a layer of cells some of which have the pale oval nucleus of the fixed tissue cell while others are typical plasma cells.

In another piece of the nerve higher up—*i.e.* two inches above the seat of maximum intensity—there is again a change in the character of the reaction. Here the endothelium of the veins is unaffected or its cells show only a slight swelling. Frequently the adventitial sheath is so occupied by plasma cells in various stages of development that only a few pale adventitial cells can be recognised. Veins surrounded in this way by plasma cells can be followed for a long distance along the epineural sheath (Photos 7 and 29). In the capillaries, where the adventitial sheath is very thin, the intima as a rule appears to be normal, but sometimes its endothelial cells show considerable reaction, and so resemble those of the proliferated adventitial sheath that the cells of both coats seem to take part in plasma-cell formation.

In this piece of nerve the reaction so closely resembles that already described in the tissues of the animals in which there was no growth of organisms outside the capsule, that a detailed description is unnecessary (Photo 7).

The signs of degeneration of the plasma cells are very marked in some sections of this series. The nucleus is usually small and deeply stained; the protoplasm of the cell is sometimes uniformly coloured—possibly due to hyaline change; at

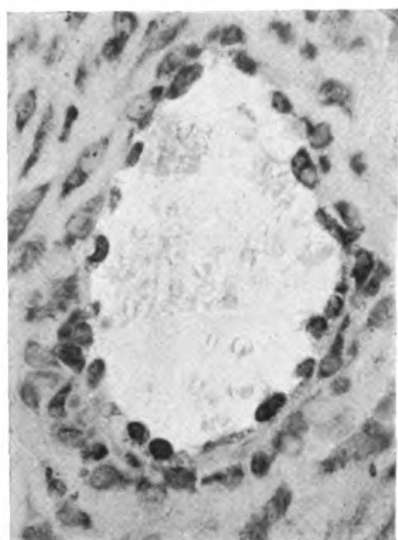


PHOTO 24.

Note the projection of the intimal cells into the lumen of the vein ; epineurium.

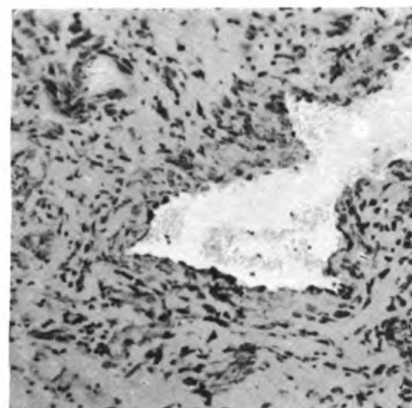


PHOTO 25.

Proliferation of adventitia of a vein.

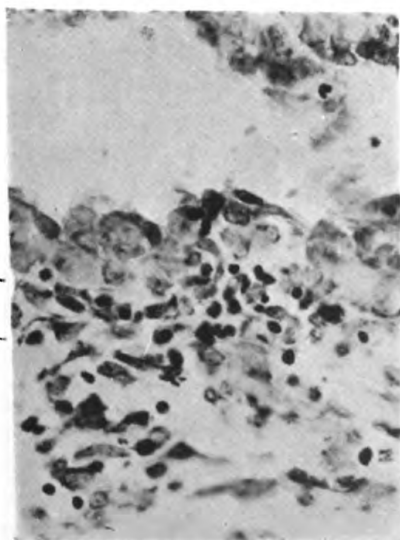


PHOTO 26.

1. Proliferation of adventitia : the nuclei are clear and swollen.
2. Small, round, dark nuclei, and developing plasma cells : epineurium.



PHOTO 27.

Note the presence of numerous plasma cells around this vein : epineurium
To illustrate Paper by Drs Orr and Rows.

other times it is vacuolated, and a reticulum may be recognised. In some cells there is practically no protoplasm left.

In the posterior root ganglia the cells of the capsule around the nerve cells are multiplied, and the nerve cells themselves exhibit various stages of chromatolysis or coagulation necrosis with homogeneous atrophy of the nucleus.

This septic series differs broadly from the first in that there is a much greater formation of fibroblasts, new vessels are present in larger numbers, and there is much more reaction of both adventitial and intimal elements.

Attention has been directed to the characters and origin of plasma cells since the appearance of Unna's work on the presence of these cells in granulation tumours of the skin, and more especially since the work of Marschalkó in 1895. Unna based his definition of these cells on their staining properties; Marschalkó relied on their morphological characters. But while the description of Marschalkó for the fully developed cell is still retained, it has become recognised that in the earlier, formative stage, and in the degenerative stage, their form and staining capacity differ considerably from the characters of his classical plasma cell. Nissl, referring to the early stages of the overgrowth of the tissues of the walls of vessels, says that "quite small forms of plasma cells may be seen with a small cell body which stains much more deeply than is usual in these cells." These small cells described by Nissl have been recognised by many observers, and have been seen by us in the brains of general paralytics, and we shall refer to other early forms in the course of this paper. Degenerative phases have also been frequently described—in fact, all plasma cells are regarded as degenerative products by some authorities (Unna, Joannovicz, Dantchakow). In this phase they sometimes resemble reticulate cells (Unna), or they may be vacuolated, or they may show solution (Herbert) or hyaline degeneration of their protoplasm (Joannovicz). Some authorities have seen them loaded with pigment. The recognition of these various forms is important, and materially assists in the task of determining the origin of these cells and their relation to the cells amongst which they are found.

The question of the origin of plasma cells has given rise to endless discussion. Unna considered that they were derived from connective tissue cells; Marschalkó, on the other hand, traced them from the lymphocytes of the blood vessels and chiefly from the veins. This view was held for a long time, and has been strongly supported by Nissl. Nissl has stated that he is firmly convinced that plasma cells are exclusively of hæmatogenous origin, and that all the stages between the lymphocyte within the blood vessels and the plasma cells in the sheath of the vessels can be traced. But when speaking of their appearance in granulation tissue he admits that intermediate forms between Unna's plasma cells and connective tissue cells, and also between Unna's plasma cells and lymphocyte-like elements, exist. In another paragraph he states that Marschalkó had observed cells with morphological characters similar to those of his plasma cell in inflammatory granulation tumours, and that they are sharply distinguished from lymphocytes and other cells with basophile bodies: he added, "the typical Marschalkó plasma cell is not so absolutely distinctive that it can under all conditions be separated from the lymphocyte-like elements and connective tissue cells with basophile cell body, and, further, intermediate stages occur between those forms of cells." Observations similar to these led many investigators to speak of two varieties of plasma cell: those of Unna—histogenous—and those of Marschalkó—hæmatogenous. Joannovicz, in a paper published some years ago, said that plasma cells, besides finding their origin from lymphocytes of the blood, could also be derived from the cells of connective tissue under certain conditions. In a more recent paper he recognises only a histogenous origin and brings forward, amongst other evidence, the following reasons against the hæmatogenous theory:—
1. Inflammatory tissues are invaded by leucocytes, but there is no increase of intravascular lymphocytes; 2. Schridde and he claim to have followed plasma cells from the tissues into the blood stream during digestion; 3. The presence of plasma cells in normal tissues, when no relationship to lymphocytes can be traced, make it difficult to admit their origin from the blood elements.

Marchand also considers that certain adventitial cells possess the capacity to form elements having the characters of lymphocytes and large mononuclear leucocytes, and he applied

the term "lymphocytoid" to these cells formed outside the blood stream; amongst them he included plasma cells. The separation of the tissue lymphocytes from the hæmatogenous lymphocytes has been strongly supported by Pappenheim, who considers the former to be the mother cells of the plasma cells. These tissue lymphocytes are now regarded as histogenous elements which have sprung from sessile perivascular cells, normal constituents in the walls of the vessels, under the influence of physiological and pathological stimuli, and from these tissue lymphocytes the plasma cells are developed. Schmaus also speaks of the usually sessile elements of the walls of vessels becoming wandering cells under suitable stimulation.

Catòla has found plasma cells in the liver in cases of general paralysis, not around the vessels but amongst the cells of the perilobular connective tissue and around the biliary canals—in fact, in regions where the connective tissue was proliferating. The fusiform cells of this tissue are described as being strongly basophile; their protoplasm gradually increases in quantity and they assume the morphological characters of plasma cells. A similar appearance of plasma cells derived from connective tissue cells has been described by Pappadia in the wall of a cysticercus cyst in the brain. Here also the fusiform fibroblasts swelled up and exhibited a basophile protoplasm; they gradually became polygonal and rounded in the outer layers of the cyst wall, and attained the characters of typical plasma cells.

The results obtained from our experiments point in the same direction. These experiments must be divided into two classes, viz., those in which there was no escape of organisms from the capsule, and in which, therefore, the results must be regarded as the effect of the action of a toxin on the connective tissues; and secondly, those in which the capsule had leaked and in some cases burst and there was a growth of organisms outside causing a much more intense reaction in the tissues. But although we have divided the experiments into these two classes, we hope to show that the differences in the results are more a matter of degree than of kind. In both, at the level of the capsule—that is, at the seat of the most intense irritation—we find the tissues of reaction arranged in similar layers, viz., a layer

formed by the proliferation of the fixed tissues of the epi- and perineurium leading to the appearance of a band of fibroblasts near the nerve, and a layer consisting largely of polymorphonuclear leucocytes and cells with a clear nucleus near the capsule; the amount of new tissue differed very much in the two classes.

In the second class, which may be spoken of as the septic class, there has occurred a huge reaction with the formation of a wide band of new tissue at the level of the capsule (Photo 21). The connective tissue cells of the epi- and perineurium are actively proliferating, so that in place of the thin sheath with its flattened cells, we find several rows of large cells with a pale nucleus and a greatly increased quantity of protoplasm (Photos 11 and 32). In many of these cells the protoplasm does not surround the nucleus, but is situated at the two poles and is extended outwards for some distance. Other cells are seen in which the protoplasm surrounds the nucleus or the nucleus may be situated excentrically and the protoplasm be on one side only. These various forms of cells may be considered to be intermediate stages in the development of the typical fusiform fibroblasts seen outside the epineurium, which, arranging themselves in parallel rows, at the same time acquire the elongated flattened form and constitute the band of fibroblasts, the most important feature in these sections.

In the sections of the nerve a little higher up fibroblasts are still being derived from the proliferating cells of the epi- and perineural sheaths, but they no longer appear in such large numbers, nor are they arranged in parallel rows as in the nerve below. Here the condition of the vessels attracts our attention. The elements of the adventitia of the vessels—veins and capillaries—are undergoing a rapid multiplication. It is remarkable to find that even in the area of maximum irritation in the septic series the arterioles are as free from reactive changes as the example shown in Photo 20, taken from a section of the non-septic series. In the veins and capillaries, however, the endothelial cells are swollen and irregular in shape. Most of them are still elongated fusiform cells with some protoplasm at each end. But in many vessels they have become rounded, and project into the lumen of the vessels to such an extent in some instances as to be almost detached from the wall of the vessel. In connection with this it is interesting to point out that Beattie

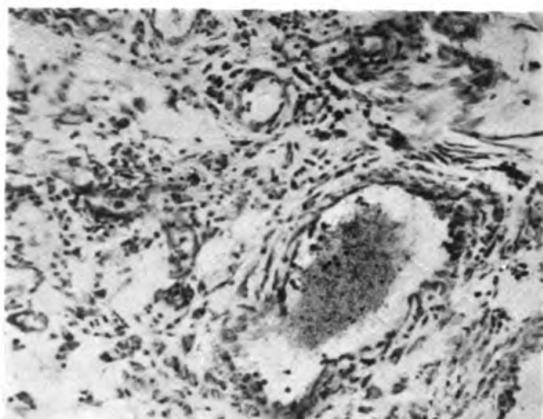


PHOTO 28.

Inflammatory reaction in nerve sheath half an inch above the capsule: inflammation much less than in photo 21.

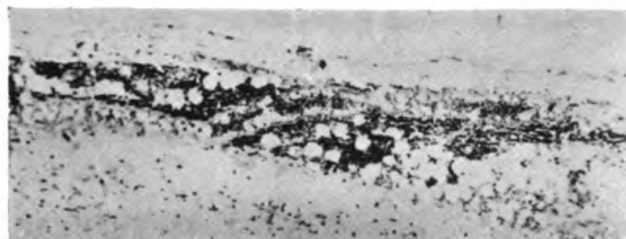


PHOTO 29.

Two inches above the capsule: epineurium: the inflammation here is almost entirely plasma cell. Compare with photo 7.

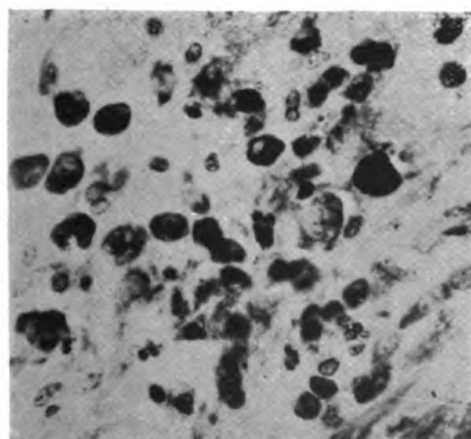


PHOTO 30.

Degenerating plasma cells.

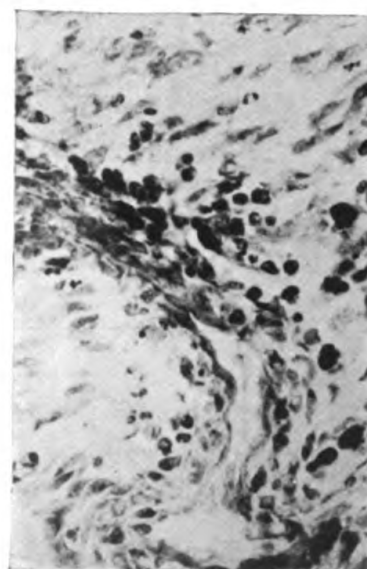


PHOTO 31.

New vessel spreading from the epineurium into the fibroblast layer. Note the proliferation of endothelium and formation of plasma cells around.

has described this swelling of the intimal cells and their complete detachment from the walls in omental inflammation. Adami, too, says that "the evidence accumulating of late years appears to point in one direction, namely, that the mononuclear cells seen within the vessels during the process of inflammation are of endothelial origin." Occasionally in our experiments we have found many of these cells in veins partially thrombosed, but at the same time there was no special collection of them in the adventitial sheaths, and they were not seen passing through the walls of the vessels. That thrombi can be formed in the vessels during the early stages of similar inflammatory processes has been demonstrated by Righetti after injection of diphtheria toxin into the sub-dural space. It is necessary, therefore, to bear these conditions in mind when discussing the origin of plasma cells from mononucleated cells within the vessels.

As mentioned above, the cells of the adventitial sheath at this level are undergoing a very active proliferation. Around many veins several rows of large coarse cells are seen in the place of the small feebly stained cells normally found in this delicate sheath. Many of these cells have the pale oval nucleus and the other characters of young connective tissue, and some can be seen streaming away from the vessel wall to join the mass of fibroblasts. Amongst the proliferating elements of the adventitial sheath there is another type of cell appearing. The cells of this type have a rounded form; their nucleus is generally round, but may be oval; it stains more deeply than the nucleus of the fibroblast and sometimes has a uniform colour. The quantity and disposition of the protoplasm also vary. In some cases there is no protoplasm to be seen, in others a very thin layer surrounds the nucleus; in some, again, the protoplasm is separated from the nucleus by a clear space. A further stage is seen in the cells whose nucleus has become excentric with a clear space on its central side, and bounded peripherally by a layer of vaguely granular protoplasm of varying thickness. This series of forms of cells demonstrates the intermediate stages in the development of the typical plasma cell from the rounded elements occurring amongst the proliferated cells of the adventitial sheath. But besides these forms of what may be termed progressive and adult plasma cells there are others indicating the regressive changes which take place (Photo 30).

In these the nucleus is smaller and generally deeply stained; the protoplasm has lost its regular edge and is often uniformly coloured. This uniform staining may be due to a hyaline change in the protoplasm, as Joannovicz has suggested, and he would trace the hyaline bodies so often seen in nerve tissues under certain morbid conditions to these degenerated plasma cells. Other regressive changes in these cells consist in the formation of vacuoles and a reticular structure in them.

The examination of these experiments has demonstrated an inflammatory reaction of the tissues of the sheaths of the sciatic nerve in response to the irritation of a toxin derived from the capsule. This reaction is characterised chiefly by the appearance of two types of new elements—fibroblasts and plasma cells. The fibroblasts are most numerous at the level of the capsule, and they find their origin principally in the proliferated connective tissue cells of the epi- and perineurium, but some are derived from the proliferated cells of the adventitial sheath of the veins and capillaries. On the other hand, the presence of what have been described as intermediate forms in the development of plasma cells in the adventitial sheaths of the veins and capillaries suggest that they find their origin in the proliferated cells of that sheath, and possibly under certain conditions from the endothelial cells also.

Now the cells which we have described as intermediate forms in the development of the plasma cells resemble very closely the cells included by Alzheimer under the term "lymphocyte," and in his opinion derived from hæmatogenous elements. Alzheimer, after stating that the separation of lymphocytes from young plasma cells offers considerable difficulty, says that he includes under the term "lymphocyte" all the infiltration cells in the walls of the vessels which do not show the characters of plasma cells, mast cells, "Gitterzellen," or polymorphonuclear leucocytes, and he then describes the forms assumed by the "lymphocyte." Most numerous amongst these are (*a*) the cells with small, round, dark nuclei, rich in chromatin and with an irregular generally darkly stained mass of protoplasm lying against or near them; (*b*) elements with a somewhat larger clear nucleus, and with a small amount of feebly stained proto-

plasm which frequently surrounds only a portion of the cell ;
(c) another form of cell which exhibits signs of degeneration in the nucleus, a cell body scarcely at all stained and exhibiting a granular structure or a network.

These various forms of cells have been recognised by all observers amongst the cells lying in the adventitial sheath of the veins and capillaries both in clinical morbid conditions and in those experimentally induced, and the difficulty has been to determine whether they are lymphocytes which have wandered out from the blood stream or whether they are derived from the proliferated elements of the walls of the vessels. The results obtained in our experiments support, we think, the view adopted by Joannovicz, Marchand, Pappenheim, Schmaus and others, viz., that the plasma cells are the derivatives of the tissue lymphocytes in the walls of the vessels, which in turn arise from the sessile perivascular fixed connective tissue elements under suitable stimulation.

As regards their origin from the proliferated connective tissue cells of the epi- and perineural sheaths, or from the areolar connective tissue, our results do not allow us to offer a definite opinion. Such an origin has been suggested by Catòla and Pappadia. The appearance of plasma cells amongst the proliferating connective tissue cells bounding the areolar spaces of the tissues around the sciatic nerve lends some support to this opinion, and further evidence is obtained from the sections of a gland in the neck which was invaded by a metastatic growth from a malignant tumour of the lower jaw. Here an active proliferation was going on amongst the cells of the fibrous sheath around the lymphatic tissue, and the intermediate forms mentioned by Catòla and Pappadia could be recognised. In our experimental tissues, however, there can be no doubt that the great majority of the plasma cells find their origin in the proliferated cells of the adventitial sheath.

We have now to inquire whether the experiments we have carried out throw any light on the conditions which determine the character of the various products of the reaction of these tissues. It will be remembered that in the sections of the septic series taken from the level of maximum irritation there is a wide band of fibro-

blasts arranged more or less in parallel rows outside the layer of degenerating polymorphonuclear leucocytes, and that the plasma cells appear in the tissues immediately surrounding the nerve, and therefore separated from the capsule by the band of young connective tissue. Sections from the nerve half an inch above the level of the capsule exhibit a somewhat different picture, but the difference is really one of degree. Here the cells of the connective tissue of the epi- and perineurium show a certain amount of proliferation, but it is not nearly so active as it is below, and the newly formed cells do not lie closely together in a compact band. The cells of the layer of epineurium furthest away from the nerve are also multiplying, and the areolar tissue spaces are surrounded by a ring of cells, some of which have the characters of fixed tissue cells and others those of plasma cells. But in this area the elements of the walls of the veins and capillaries exhibit the most marked changes. The cells of the endothelial layer are swollen and in some cases proliferating, and there is a very active multiplication of the cells of the adventitial sheath. Some of these cells resemble fibroblasts, but plasma cells in the various stages of development are much more in evidence than they were below.

In a piece of nerve still further away from the source of irritation the results are again different. Here the fixed cells of the epi- and perineurium show very little reaction. The cells of the endothelial layer of the vessels are only slightly swollen, and the striking feature is the presence of large numbers of plasma cells crowded together in the adventitial sheath of the veins and capillaries. In many instances they are so numerous that no other type of cell can be recognised; in other vessels proliferated adventitial cells are seen amongst them. It would appear, therefore, that the irritant acting in this area gives rise to a proliferation of the cells of the adventitial sheath and a development of a large number of plasma cells from them, but there is an almost complete absence of fibroblasts such as has been found where the intensity of the stimulus was greater. If, now, a comparison be made between the sections from above the level of the capsule and sections of portions of the sciatic nerve taken from the animals in which there was no growth of organisms outside the capsule, and where it may be assumed the degree of irritation was more limited, it will be found that there is a striking resemblance

There is the same slight swelling of the cells of the endothelium, the same proliferation of the cells of the adventitial sheath, the same crowding of plasma cells into this sheath and a similar absence of fibroblasts. It is true that a thin layer of fibroblasts was present immediately around the capsule in these cases, but as this was the sole area in which they were found they cannot be considered a characteristic feature of the general reaction.

These observations suggest that the character of the cells seen in the reaction around and in the sciatic nerve depends on the intensity of the irritant producing the reaction. Support for this view is obtained from the experiments of other observers, and those carried out by Nissl on the brains of animals are very interesting. He found that if Indian ink be injected into the sub-arachnoid space without injuring the brain, plasma cells are present in the sheath of the vessels before any reaction of the cells of the adventitial sheath is evident. Again, after freezing a small area of the brain and producing a localised necrosis there was an immense overgrowth of the cells of the endothelium and adventitia with the formation of fibroblasts, but very few plasma cells were seen in this area of intense reaction; they were numerous in the surrounding pial vessels. Painting the meninges with chromic acid also produced necrosis of the subjacent tissues associated with the appearance of polymorphonuclear leucocytes in the focus of injury; this was surrounded by a collection of fibroblasts, and very few plasma cells were present excepting in the zone of tissue bounding the necrosed area. Friedmann obtained similar results by producing aseptic wounds of the brain; plasma cells and the formation of new vessels appeared in the zone outside the necrobiotic area. Righetti, in his experiments of injecting diphtheria toxin into the sub-arachnoid space, found polymorphonuclear leucocytes around the veins and capillaries after a few hours, but these soon disappeared. Their place was taken by mononuclear cells, which he thought might be plasma cells in process of development; later still—thirty-two to thirty-eight hours after the injection—the adventitial sheath contained mononuclear leucocytes and numerous plasma cells, and in the animals which lived longer all the cells in the sheath were plasma cells.

The paper by Joannoviez, to which we have referred already

several times, contains such an interesting résumé of the work done by himself and others on the conditions which determine the appearance of plasma cells that we venture to quote from it still further. Joannovicz starts by expressing his agreement with Marschalkó that these cells are absent in the acute stages of inflammatory processes, but are present in sub-acute and chronic conditions in all organs: they occur in the recovery stage of acute inflammations. They are of especial interest in gonorrhœa, which has a tendency to sub-acute and chronic forms. In gonorrhœal affections they are found in the submucous tissues more than near the surface. They are present in all infective granulomata; in trichinosis; in the limiting wall of carcinomata. They are not found in leukæmia. They are not found in normal brain, but are present in many diseases of that organ, including lues cerebri, phosphorus poisoning, acute alcohol poisoning, delirium tremens, status epilepticus and hydrophobia; they can, therefore, no longer be considered pathognomonic of general paralysis.

Experimental investigations have confirmed this. Toxins, experimentally introduced into animals, cause the appearance of plasma cells when they give rise to sub-acute and chronic inflammations, but not in acute conditions. Marschalkó introduced bits of sponge infected with cultures of gonococcus and weak tubercle bacilli into the peritoneal cavity, and found later that there were no plasma cells in the substance of the sponge but many in the enclosing tissues. Reiz saw them in the brains of rabbits after introducing bits of elder pulp—in fact, the conditions produced by this method resembled those occurring in experimental tuberculosis of the brain.

Now a consideration of these various experiments suggests that the most important factor in determining the character of the elements produced in an inflammatory process is the amount and intensity of the irritating agent. Joannovicz has shown that plasma cells do not appear excepting in sub-acute and chronic conditions, and the experiments of Nissl and Friedmann demonstrate that with an acute irritation or destruction of nerve tissues the central focus is occupied by leucocytes, that these are surrounded by a layer of fibroblasts, and that plasma cells appear outside this in a zone adjacent to the healthy tissues. In our experiments we have found that at the seat of maximum intensity,

in the septic series—*i.e.* at the lower end of the nerve examined—there is a reaction characterised by the appearance of fibroblasts, and at the top, furthest from the source of the irritant, by the appearance of plasma cells; in the intermediate portion there are fewer fibroblasts, and plasma cells are beginning to be prominent. Evidence in the same direction is obtained from the non-septic series, in which the intensity of the irritant has not exceeded the degree favourable to the production of plasma cells; and even in this series the amount of the plasma-cell reaction diminishes in the areas furthest from the source of irritation and is least around the vessels within the fasciculi of the nerve. This does not exclude that other factors, such as the duration of the action of the irritant, the reactivity of the tissues and to a certain extent the quality of the irritant itself, affect to a certain extent the determination of the degree of the inflammatory process, but they play a subordinate part. Now, if we adopt the definition of inflammation given by Grawitz, and supported by Adami and others, *viz.*, that it is “the reaction of irritated and damaged tissues which still retain vitality,” we may recognise, even in such different reactions as are seen in the area of fibroblasts on the one hand and in the area of plasma cells on the other hand, two degrees of the same inflammatory process, produced by one common cause and determined by a difference in the amount and intensity of the irritant in the two areas.

As was mentioned at the beginning of this paper, our main object in undertaking the present research was to confirm by histological observation the view previously advanced that the lymph stream in nerves is an ascending one, and that toxins can be carried to the cord by that path. The evidence detailed above leaves no reasonable grounds for doubting that this view is correct, and if we look a little more closely at our results the reaction of the mesodermal tissues to the toxin shows that the lymph not only ascends in the spaces of the nerve sheaths, but passes between the nerve fasciculi in all directions in the fibrous septa, and, judging from the vascular reaction, percolates into the nerve bundles.

One point of great interest is the fact that the vascular

reaction is confined to the veins and capillaries, showing that the lymph spaces of the adventitial sheath of these are in direct communication with the lymphatic system of the nerve; and although, doubtless, the adventitial lymph system of the arterioles communicates with that of the nerve also, yet the intense reaction around the veins and capillaries points to these as being the principal channel by which the lymph regains the general circulation. This opinion is supported by researches carried out by other methods, such as the injection of coloured fluids into the sub-arachnoid space; these rapidly find their way into the adventitia and thence into the blood stream. According to Lewandowsky, from whom we quote, the veins, capillaries, and pacchionian bodies are the media by which the cerebro-spinal lymph returns to the general circulation. The reason, therefore, why the adventitia of the veins and capillaries of a nerve the subject of lymphogenous intoxication should show so much inflammatory change is obvious; and the readiness with which this coat becomes implicated in such an infection must be an important factor in the pathology of some morbid processes.

There is one morbid condition which occurs to our minds in this connection, general paralysis of the insane, and it is suggested by the remarkable degree of adventitial reaction which is a feature of the disease (Photos 33, 34). According to the authoritative statement of Alzheimer the lymph sheath of the vessels becomes filled with cells, of which the most important are plasma cells. The capillaries are affected first, and then the vessels a little larger than these. Lymphocytes come next in importance to plasma cells, and under the term lymphocyte there are several kinds. Some have a round dark nucleus rich in chromatin, with a dark mass of protoplasm in the neighbourhood; other elements possess a larger clearer nucleus with a faintly stained border of protoplasm often surrounding only a portion of the cell; and a third form is characterised by a degenerated nucleus and a larger very faintly stained body showing a granular or reticular structure. There are difficulties in the way of separating these cells from plasma cells. In any case they are not of as great importance as the latter. They are seldom found in the walls of capillaries, but are associated with plasma cells in the walls of the larger vessels. We do not agree with Alzheimer that these cells are varieties of lymphocytes. From the results

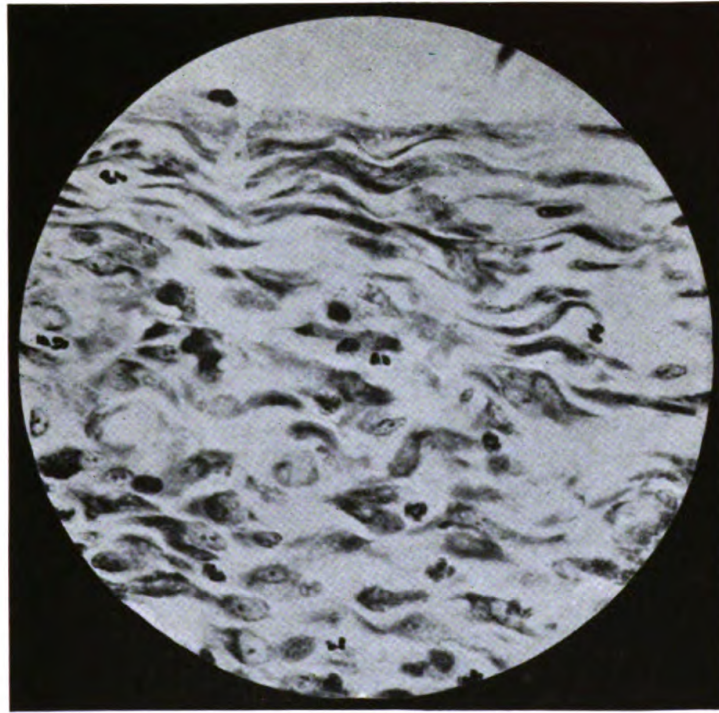


PHOTO 32.

Formation of fibroblasts in perineurium. Note the various forms.

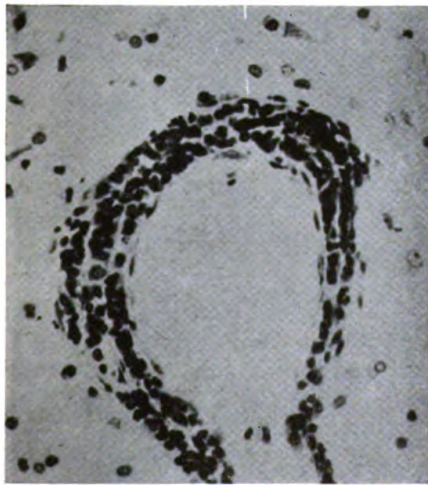


PHOTO 33.

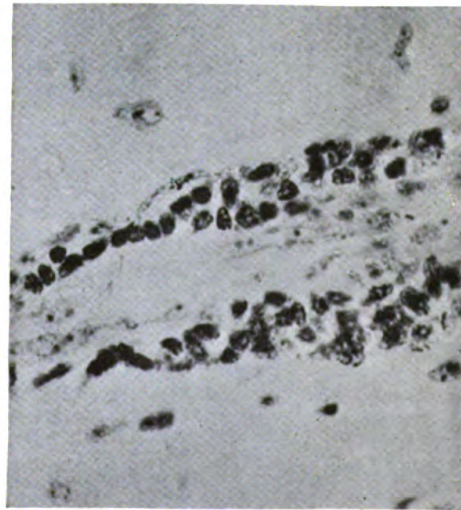


PHOTO 34.

Photos 33 and 34 are of veins from the cortex of a general paralytic. Note how the adventitia in both is filled with plasma cells; the intima of 33 shows no proliferation.

To illustrate Paper by Drs Orr and Rows.

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of our experiments we accept the view of Joannovicz and others that they are really intermediate stages in plasma-cell development. Alzheimer attaches great importance to the overgrowth of the intima and to the new vessels which spring from it. This occurs especially in connection with the capillaries.

The pathology of general paralysis of the insane can no longer be explained by such a phrase as "premature decay of the neuron," and authorities, including Nissl, now regard the changes in the brain as essentially inflammatory. Whatever may be the exciting agent of the chronic inflammation—and in this connection we go no further than to suggest by analogy that it is toxi-infective—the similarity of the perivascular changes with those in our experiments inclines us to the opinion that it is to be found in the lymphatic system. The mere breaking down of the neuron with formation of degenerative products would alone be insufficient to so poison the cerebro-spinal lymph that adventitial changes would ensue to such an extent. During life products of nerve metabolism must be a constant constituent of the lymph, as this is the only channel by which they can be carried off, so that before vascular changes show themselves there must be another factor, and that a morbid one, at work; the same one most probably under whose influence the neuron is degenerating. Once the lymph is poisoned, and flowing in the adventitial lymph spaces induces proliferative changes there, these spaces must become in time greatly reduced in efficiency and ultimately blocked, so that another morbid mechanism comes into operation, viz., lymph block. The longer, therefore, the exciting agent exercises its deleterious effects, the more will the adventitial proliferation tend to maintain a stasis of the lymph now loaded with the bye-products of degeneration; and its action on all the epiblastic and mesoblastic elements must therefore become more potent.

Our experiments seem to suggest that general paralysis owes its origin, its widespread nature, and chronicity, to a mechanism such as the above. What its actual causation is appears only explicable by the presence of toxins of some organism or organisms gaining access to the lymph which bathes the brain and membranes. There is a great deal of evidence to show that the "bacillus paralyticus" of Robertson and M'Crae is a pathogenetic factor of much importance, but as we have obtained

exactly the same morbid phenomena with two other organisms, we cannot accept the specificity attributed to it.

In conclusion we have to thank Professor Lorrain Smith for affording us facilities for continuing our experimental work in his department at the University of Manchester.

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THE MESENCEPHALIC FIFTH ROOT—AN ADDENDUM.

By LEONARD J. KIDD, M.D.

A FEW days after the November 1910 number of this *Review* appeared I found for the first time the report of a case, published six months ago, that definitely supports the belief I expressed in the October number of this *Review* that the mesencephalic fifth root is composed of the peripheral processes of endoneural afferent ganglionic cells, and that its fibres probably regenerate after their section. The case I now refer to is a valuable one by T. H. Weisenburg,¹ of a tumour of the right cerebello-pontile angle which was diagnosed for six years as tic douloureux:—M., 35, began to suffer in 1903 from typical right tic douloureux of the second division of the fifth nerve, followed later by a similar condition in the first division. Five peripheral operations were done in the infra-orbital foramen. In 1907 the patient was seen by Weisenburg. Gasserianectomy was attempted, but the patient collapsed. Later in 1907—exact date not stated—a second Gasserianectomy was performed, and the sensory and motor fifth roots were divided. “A few months later” there was return of pain in face, throat, and tongue, and a peculiar form of paræsthesia as of roaches crawling in the oral cavity. Weisenburg shows clearly by his second figure that the afferent fifth root was really divided in this second ganglion operation.

Autopsy showed a tumour in the right cerebello-pontile angle lying directly on the sensory and motor root of the fifth nerve; it also stretched the ninth and tenth roots. On microscopical examination “the cells of the mesencephalic root of the fifth nerve were normal. The right fifth nerve was cut in various parts. First, that part was taken which was farthest away from the tumour. In this section both the motor and sensory roots could be seen. In the motor there were found distinct evidences of regeneration, while in the sensory here and there were well-defined myelin sheaths and axis cylinders, although most of the sensory root was degenerated. Further sections of the motor and sensory roots showed a similar condition to that already described. It is my intention to

¹ *Journ. of Amer. Med. Assoc.*, Vol. liv., May 14, 1910, pp. 1600-1604, 2 figs.

discuss the question of regeneration in the sensory root of the fifth nerve in a subsequent communication."

The above-mentioned case had been previously reported by Weisenburg at a meeting of the Philadelphia Neurological Society on February 25, 1910.¹ He writes: "This case teaches that the distribution of the fifth and ninth nerves intermingle, and that if the pain persists in the tongue, ear, and apparently lower face after the fifth nerve is cut, it is due to irritation of the ninth nerve." Here I would say that we cannot admit that any part of the lower face is innervated in man by the ninth nerve unless experimental section thereof should be found to show subsequent degeneration of some nerve trunks distributed peripherally to the lower face. The correct interpretation of the return of pain in the lower face in Weisenburg's case is, I think, that it was due to irritation by the tumour of the normally medullated minority of fibres in the divided afferent fifth root. These intact fibres must have risen in cells situated centrad of the point of section, viz., the cells of the locus cœruleus, which give origin to part of the fibres of the mesencephalic fifth root. In this case, doubtless, the trigemino-thalamic path was uninterrupted; therefore pressure on the motor and sensory fifth roots could cause pain which would naturally be referred to the peripheral distribution of those fibres of the mesencephalic root which were pressed upon—in this case those that go to the lower face. Further, the case seems to suggest that in man the mesencephalic fifth root takes its peripheral exit either wholly or in part by the sensory root; but, since the motor root showed evidence of regeneration, clearly some of the fibres of the mesencephalic root may pass out in it also.

Spiller² has done an excellent service to neurology in drawing attention to the puzzling fact of the return of pain in some of the cases of tumour of the Gasserian ganglia after Gasserianectomy. This was striking in the case of Dercum, Keen, and Spiller; also in Spiller's second case, and in that of Hofmeister and Meyer. The last-named two observers think it is due to extension of the tumour into the central stump of the fifth nerve. Spiller points out that division of the afferent fifth

¹ *Journ. of Nerv. and Mental Disease*, July 1910, pp. 452.

² *Amer. Journ. of Med. Sciences*, Vol. cxxxvi., November 1908.

root or Gasserianectomy is not an infallible means of relieving suffering. The true explanation of the return of pain in some of these cases is, I think, that the descending peripheral fibres of the mesencephalic fifth root are involved by the tumour. If, in any given case, the pain returns before regeneration of the divided fibres of the mesencephalic root could have taken place, then the explanation offered by Hofmeister and Meyer is the correct one for that case; for we have here (1) an intact condition of all the fibres of the mesencephalic root centrad of the point of section, (2) an intact condition of their cells of origin higher up, and (3) an intact path to the thalamus. In such a case, then, involvement of the central stump or of the parts higher up renders a return of pain not only possible but inevitable. It seems to me that the fact, that in non-organic trigeminal neuralgia pain does not recur after complete afferent fifth root section or Gasserianectomy, proves the correctness of the current teaching that the disease is due to an affection of the ganglion, or at any rate is not due to an affection of any part of the fifth root above the ganglion.

The return of pain in the face after operation by an experienced surgical neurologist should always make us think of the possibility of a lesion, especially syphilis or tumour, of the Gasserian ganglion, pons, or cerebello-pontile angle. On the question of post-operative functional pain in the face it must be confessed that our means of differentiating it from organic pain are meagre. We cannot here usually invoke the aid of the lachrymal reflexes, because, so far as we know at present, section of the afferent fifth root abolishes all those lachrymal reflexes whose afferent path lies in the afferent fifth root, *i.e.* those from eye, nose, and tongue.

The limitation of the post-operative pain in Weisenburg's case to the lower face suggests that this may be the only peripheral area of distribution of the mesencephalic fifth root in man. The part of the Gasserian ganglion attached to the ophthalmic division of the fifth nerve was found on autopsy to be present; if, therefore, any of the fibres of the mesencephalic root enter this division of the nerve, they should in Weisenburg's case have regenerated and have been found intact in that trunk; unfortunately it was not examined microscopically. But, if such fibres do exist in it, they must have escaped involvement by the

tumour. On the whole, it seems more probable that the lower face is the only peripheral area in man: the matter could, of course, be easily settled experimentally in higher mammals.

In conclusion, I feel sure that all scientific students of neurology will eagerly look forward to Weisenburg's promised work on the interesting and practically important question of regeneration in the afferent fifth root. Up to the date of writing (November 12, 1910) I have seen no reference to any such published work from his pen.

Abstracts

ANATOMY.

NEW METHODS OF INVESTIGATION CONCERNING THE CONNECTIONS BETWEEN THE VESTIBULAR APPARATUS, THE CEREBELLUM, THE CEREBRUM AND THE SPINAL CORD. (Neue Untersuchungsmethoden, die Beziehungen zwischen Vestibularapparat, Kleinhirn, Grosshirn und Rückenmarkbetreffend.) ROBERT BÁRÁNY (Vienna), *Wien. med. Wochenschr.*, Aug. 27, 1910.

BÁRÁNY points out that a patient with labyrinthine disease, which causes marked rotary nystagmus to the right, will fall to the left when Romberg's test is applied: if the head is now turned 90 degrees to the left he falls backwards; if 90 degrees to the right he falls forwards. In cerebellar disease there is, however, no connection between the spontaneous nystagmus (usually present) and the direction of falling: the patient may have nystagmus to the right and yet fall to the right. The influence of the position of the head upon the direction of the fall is absent. Bárány examined a number of cases with cerebellar troubles, and found that very often syringing with cold water produced quite normal nystagmus, but that the influence upon the direction of falling was abnormal: if he syringed the left ear with cold water he got strong rotary nystagmus to the right, but nevertheless the patient fell forward; on turning the patient's head 90 degrees to the left he still fell forwards.

Bárány was able to demonstrate post-mortem to the Vienna Neurological Society the cerebellum of a patient in whom he had by this method correctly diagnosed during life a tumour of the vermis. The vestibular nerve after passing through the vestibular

ganglion divides into two parts—(a) the ramus descendens, which goes to Deiters' nucleus and produces vestibular nystagmus ; and (b) the ramus ascendens, which enters the cerebellum and ends round a Purkinje cell : from there the axon of this cell goes down to a cell of the vestibular nucleus, the axon of which descends into the spinal cord (vestibular spinal path). It is this latter division which is concerned in the application of Romberg's test to cases of labyrinthitis and cerebellar disease. If we cause a normal individual with closed eyes to stretch out his arm and touch with the forefinger an object held in front of him, and then draw back his hand and point again at the object, we find that nearly everyone can point with accuracy. If we apply this test after turning a normal person ten times to the right and stopping suddenly, we find that he points to the right side. In cases of recent cerebellar abscess the patient (without turning) always points incorrectly with the hand of the diseased side : such a patient can, however, even after turning, touch the tip of his nose with his forefinger when his eyes are closed, although he makes a big error in pointing to an object in front of him. Bárány says that these phenomena can only be understood if we assume that the effect of the vestibular innervation is corrected in the cortex of the cerebrum by means of fibres which pass in the brachium conjunctivum from the cerebellar to the cerebral cortex : he is confirmed in this opinion from observation of a case of hemiathetosis. J. S. FRASER.

VESTIBULAR APPARATUS AND CEREBELLUM. (Vestibular-
(655) *apparat und Kleinhirn.*) BÁRÁNY, *Verh. d. deutsch. otol. Gesell.*,
1910, S. 329.

THIS paper does not lend itself to abstract, but it contains very little that is not mentioned in the paragraph above : the author gives a diagram showing the nervous mechanism which gives rise to the head movements of vestibular origin. J. S. FRASER.

PHYSIOLOGY.

THE LATENCY OF THE KNEE JERK RESPONSE IN MAN
(656) **AS MEASURED BY THE THREAD GALVANOMETER.**
SNYDER, *Amer. Journ. Physiol.*, Vol. xxvi., No. 7, 1910, p. 474.

THE object of the research, which was carried out by means of Einthoven's String Galvanometer, has been to determine the character and latency of the action current of the muscles involved in the knee jerk in man.

The handle of the hammer used for causing an impact on the

patellar tendon is allowed to cast a shadow on a moving photographic plate at the moment when the tendon is struck and the shadow of the string is recorded on the same plate.

The work of Gotch, Waller and Franz is discussed, and their determinations of the latency of the knee jerk are compared with those now obtained.

The time found by the author to elapse between stimulation of the patellar tendon and beginning of the electrical variation in the thigh muscles, a single diphasic deflection, is about 0.011 sec. The time of conduction in mammalian nerve is taken from the work of Piper to be 127 metres per sec. A temperature coefficient of 2.5 is assumed in calculating the delay of the synapse, which would yield a time of 0.0019 sec. for passage of the impulse through the spinal cord.

The conclusion is reached that the knee jerk in man is in all probability a true reflex, but the author postpones final decision awaiting more experimental evidence.

W. A. JOLLY.

PATHOLOGY.

SECONDARY GROWTHS AFFECTING SPINAL ROOTS. E.

(657) FARQUHAR BUZZARD, *Proc. Roy. Soc. Med.*, July 1910, Neurological Section, p. 124.

THIS is the record of a case in which the clinical history and examination gave no real clue to the disease, but it is chiefly of interest as showing the necessity for microscopic investigation of the nervous system before making any positive statement about the presence or absence of gross disease. In this case nothing appeared wrong to the naked eye, but microscopically an intense infiltration of both anterior and posterior spinal roots by sarcoma cells was found, whereas the meninges were only affected so to a slight degree.

J. H. HARVEY PIRIE.

STUDIES RELATING TO CHRONIC CEREBRAL EPENDYMITIS.

(658) (*Étude sur les épendymites cérébrales chroniques.*) GABRIEL DELAMARE et PIERRE MERLE, *Arch. de Méd. Expérimentale*, No. 4, July 1909, p. 458.

EPENDYMAL GRANULATIONS WITH AMYLOID BODIES.

(659) (*Granulations Épendymaires à Corps Amyloïdes.*) GABRIEL DELAMARE et PIERRE MERLE, *Tribune Médicale*, Nov. 6, 1909.

CHANGES IN THE EPENDYMA FOLLOWING LESIONS IN THE

(660) **VICINITY AND AT A DISTANCE.** (*Modifications Épendy-*

maires consécutives à des lésions de voisinage et à des lésions éloignées.) GABRIEL DELAMARE et PIERRE MERLE, *Tribune Médicale*, March 12, 1910.

THESE papers, forming the first three numbers of a series of articles on ependymal conditions, describe in considerable detail the alterations in the ependyma found in various pathological states. The authors endeavour to show the relation, the importance, and the frequency of ependymal reactions and to give a rapid glance over the elementary processes (primary, secondary, or synchronous) from which result the principal anatomical modifications.

Chronic ependymitis is found in a very large number of conditions, and is most frequent in the anterior and middle part of the lateral ventricle near the foramen of Munro. The granulations, in the granular form, consist essentially of thickened neuroglia fibres. The vessels in the neighbourhood show no constant hyaline nor arterio-sclerotic changes, but have frequently numerous amyloid bodies surrounding them. Following the neuroglial proliferation we get proliferation and degeneration of the epithelium. The degeneration leads to the destruction of the cubical cells which clothe the summit of the granulation. The proliferation results in a stratified layer of epithelium, or the surface of the cells may project inwards and end in a free extremity or curve round to unite with another projection, thus forming a lumen. Similar pseudo-glands may result from progressive vacuolation in the cells or from epithelial invagination. The various forms of chronic ependymitis are probably stages of the same process. Granular ependymitis leads to reticulated ependymitis by the formation of ridges of thickened neuroglia uniting the granulation, so that these appear as the nodal swellings of a reticulum with unequal meshes. By the enlargements of nodes and trabeculæ the reticulated form in turn gives place to areolar ependymitis. Crypts are due to a sinking of the ependymal surface rather than to an epithelial invagination: they are determined by the rarefaction of the subjacent tissue. From the evolution or confluence of the granulations we get varioliform and other varieties of ependymitis.

In the second paper is traced the relation between the development of glial sclerosis and the appearance of amyloid bodies. The numerous and diverse conceptions concerning the origin and nature of these bodies are briefly mentioned, and the theory is put forward that they arise by the precipitation of a circulating albumen—probably derived from the cerebro-spinal fluid.

The chief variations dealt with in the third paper are specks, bullæ, cup-shaped depressions, and perforations following peri-

ependymal softenings; perforations and pigmented scars following hæmorrhages; and folds of the ependyma resulting from meningo-cortical sclerosis.

JAMES W. DAWSON.

CONTRIBUTION TO THE COMPARATIVE PATHOLOGICAL
 (661) **ANATOMY OF LABYRINTHITIS.** (*Beitrag zur vergleichenden pathol. Anatomie der Labyrinthitis.*) HERMANN MARX
 (Heidelberg), *Zeitsch. f. Ohren.*, Bd. 61, S. 1.

ALLOWANCES must be made for anatomical differences when we try to compare pathological conditions in the labyrinthitis of animals and men. Mayer experimented on rats, and came to the conclusion that the round window was the commonest point of entry of infection in bases of labyrinthitis. Marx has investigated labyrinthitis in guinea-pigs, and frequently found changes in the bony capsule similar to those found in human otosclerosis. Neumann has demonstrated guinea-pigs suffering from vestibular symptoms, and yet on microscopical examination he found in some cases only serous labyrinthitis without perforation between middle and inner ear. Marx gives the clinical history of a hare which had its head bent over to the right so markedly that the vertex touched the floor: the animal moved in circles to the right, and when frightened rolled over to the right: eye nystagmus was not present.

Microscopical examination showed middle-ear suppuration on right side without perforation of tympanic membrane: the membrane closing the round window was infiltrated with pus. The cochlea showed purulent labyrinthitis most marked in the scala tympani: the vestibule and canals on the right side showed only a little hyalin substance: the left ear and the brain were normal. Marx gives details of a mouse which showed similar symptoms to the hare described above, and yet at microscopical examination only otitis media was found: the author comes to the conclusion that the symptoms are to be ascribed to toxic influences causing functional injury to the vestibular apparatus. Along with other observers he regards the hyalin masses (found in the vestibule in the case described above) as artefacts.

J. S. FRASER.

ANATOMICAL AND MICROSCOPIC FINDING IN A CASE OF
 (662) **CURED MENINGITIS AND LABYRINTHITIS.** (*Anatomischer und mikroskopischer Befund bei geheilter Meningitis und Labyrinthentzündung.*) PANSE, *Verh. d. deutsch. otol. Gesell.*, 1910, S. 31.

THE case was that of a female, aged 33, who fell in a faint and probably injured her skull: the ears had previously been healthy.

Fever, earache, tinnitus, giddiness, and vomiting supervened, and, on admission, rotatory nystagmus to the right was observed, along with pain on moving the head, tenderness on percussion of the skull and on pressure over the left mastoid process: the mastoid operation was performed and a little pus was discovered in the air cells. The temperature continued high, and nystagmus to the left was noted along with the occipital headache: accordingly the labyrinth was opened and the middle and posterior cranial fossæ drained. Recovery was slow. The patient died a year later of peritonitis. At the autopsy the brain was congested and œdematous, and there was a deposit of fibrin over the medulla and cerebellum on the left side: microscopical examination showed masses of connective tissue and new bone formation filling up the labyrinth and a small sequestrum behind the facial nerve: the acoustic nerve was atrophic.

J. S. FRASER.

CLINICAL NEUROLOGY.

HERPES IN SCARLET FEVER. J. D. ROLLESTON, *Brit. Journ. (663) Derm.*, 1910, p. 309.

IN 413 cases of scarlet fever herpes facialis was noted in 27 cases or 6·5 per cent.—a figure slightly exceeding that found by the writer in diphtheria, in which it occurred in 4·2 per cent. (*v. Review*, 1907, p. 906). The facial herpes of scarlet fever, like that of diphtheria, is essentially a phenomenon of the acute stage; in all but two it occurred within the first week of the disease. One case of herpes progenitalis was noted, but there was none of herpes zoster, the occurrence of which in scarlet fever has been noted by Moureyre, Girard, and Letulle. As in diphtheria, the eruption was commoner in the severe than in the mild cases, being found in 12·6 per cent. of the former as compared with 4·1 per cent. of the latter.

AUTHOR'S ABSTRACT.

DIE BALKENBLASE ALS FRÜHSYMPTOM BEI TABES DOR-
(664) **SALIS.** BÖHME, *Zeitschr. für Urologie*, Bd. 4, H. 9, S. 671.

AN article with the above title recently appeared in the *Zeitschr. für Urologie*, by R. Frohnstein. Böhme, in the present article, clearly shows by ample quotations, that the paper referred to is practically copied word for word from his original article in the *Münch. med. Wochen.*, 1908, No. 50.

JAMES M. GRAHAM.

ANTERIOR POLIOMYELITIS. METHODS OF DIAGNOSIS FROM (665) SPINAL FLUID AND BLOOD IN MONKEYS AND IN HUMAN BEINGS. F. P. GAY and W. P. LUCAS, *Arch. of Inter. Med.*, Sept. 1910, p. 330.

THE author's conclusions are as follows:—

The acute stage of anterior poliomyelitis, as it occurs in human beings, and as it is produced experimentally in monkeys, is characterised by the occurrence of a distinct leucopenia. The differential count shows a relative increase in number of eosinophiles and lymphocytes. As studied experimentally in monkeys, the leucopenia of the acute stage is not preceded by any constant leucocyte picture.

The spinal fluid in poliomyelitic monkeys shows more marked and characteristic findings. There is a marked increase in the number of cells during incubation and prodromal stage. The increased cells are at first mononuclear in type, and are later replaced by polymorphonuclear cells. A fibrin clot appears in the prodromal and early acute stages, but disappears later. These findings in monkeys agree with the findings in human beings, so far as observation goes.

Tests for anti-bodies to the poliomyelitis virus and for antigens to a supposed anti-serum to poliomyelitis (blood of animals repeatedly inoculated with active and then inactivated virus) were made by means of the Bordet-Gengou fixation reaction. There was no evidence of anti-bodies in the serum of monkeys taken at intervals during the acute disease or in the serum of unsuccessfully inoculated monkeys. There was no evidence of the antigen in the spinal fluids of monkeys or of human beings at various stages in the disease, or in the blood-serum of monkeys suffering from the disease. These latter results corroborate and extend the negative findings of Wollstein.

J. H. HARVEY PIRIE.

A POSSIBLE SECOND ATTACK OF ACUTE ANTERIOR POLIO- (666) MYELITIS IN THE SAME PATIENT. A. A. ESHNER, *Med. Record*, 1910, ii. p. 527.

ESHNER reviews the literature, and records the following personal case:—A girl, aged 25 months, had an attack of poliomyelitis, the right lower extremity being affected. Under electricity and massage practical recovery took place. Eleven years later, a day after a fall weakness and wasting of both hands developed, transitory on the right side and persistent on the left side.

Eshner thinks that a second attack of poliomyelitis is a more probable explanation of these symptoms than peripheral neuritis due to the fall.

J. D. ROLLESTON.

A CASE OF ACUTE POLIOMYELITIS WITH SUBSEQUENT (667) SYRINGOMYELIA. (Ein Fall von Poliomyelitis anterior acuta cruciata mit folgender Syringomyelia.) J. NELKEN, *Ztschrft. f. d. gesamt. Neurol. u. Psychiat.*, Sept. 1910, S. 196.

THIS combination, of which only one case appears to have been recorded before (Harris, *Brain*, 1901), is purely a clinical diagnosis, but the facts seem to warrant it. The patient, when aged 6, during an acute illness developed the sign of an acute poliomyelitis affecting chiefly the left arm (C5-D1) and the right leg (L4-S1). Syringomyelic symptoms were noticed first when he was sixteen, viz., spastic and trophic symptoms with marked diminution of pain and temperature sense. The syringomyelia appeared to affect the paralysed extremities almost simultaneously. On all the extremities the motor and trophic symptoms were limited to the lower cervical (C7-D1) and lumbar (L4-S1) segments. The gliosis therefore affected exactly the same area as the poliomyelitis in the lumbar enlargement, a slightly lower one in the cervical. The sensory disturbances were also greatest in the paralysed limbs, and at the levels affected by the poliomyelitis, only more extensive in both upward and downward directions (C4-D1 and L3-S1). It would seem, therefore, as if the gliosis had been followed directly on the poliomyelitic process.

J. H. HARVEY PIRIE.

MENINGITIC FORM OF INFANTILE PARALYSIS. (Contribution (668) à l'étude de la Forme méningitique de la Paralysie infantile.) G. PAISSEAU et J. TROISIER, *Gaz. des Hôp.*, Oct. 11, 1910, p. 1575.

THE case recorded here would seem to represent a meningitic type of poliomyelitis. A child of 7 became suddenly feverish, with severe pain in the back and limbs. Five days later there were present symptoms indicating a widespread involvement of the central nervous system, although meningeal symptoms predominated. He had Kernig's sign, neck-rigidity, general hyperæsthesia, and in the cerebro-spinal fluid a lymphocytosis and albumen. But there was also Babinski's sign, quadriplegia, muscular hypertonus, and exaggerated reflexes in the lower limbs and hypertonus in the upper, facial and lingual paralysis, mydriasis and strabismus.

The symptoms cleared up one by one, and in two months the child had completely recovered. The cerebro-spinal fluid gave no organisms by culture. Intracranial injection in a rabbit brought about death with flaccid paralysis, but attempts at transmission from this rabbit to others failed.

J. H. HARVEY PIRIE.

CONTRIBUTION TO THE SYMPTOMATOLOGY OF PROGRESSIVE
 (669) **MUSCULAR ATROPHY IN CHILDHOOD.** (*Beitrag zur*
Klinik der progressiver Muskelatrophie in Kindersalter.) D. F.
 LANGE, *D. Z. f. Nervenhk.*, Bd. 40, H. 1-2, 1910, S. 65.

THIS paper gives an account of progressive muscular atrophy in two children—a boy and a girl, aged 11 and 6 respectively. The mother and father were healthy. The mother had had six pregnancies. The first was the boy described in this paper; the second was a boy who was well up till nine months old, was breast-fed, and at nine months could stand up in his bed. Then the child gradually became weaker in the arms, legs, and back, lost the power of sitting up, developed double cataract when three years old, was operated on when four years old, and died when about eight years old.

Mentally the child was normally developed but was backward.

The third pregnancy was twins: these died on the tenth day after birth. The fourth was a girl, and is the second case to be described. The fifth was a boy, born in 1906, and at the present time quite healthy. The sixth pregnancy, in 1909, again resulted in twins, one of whom died shortly of diarrhoea.

CASE I.—A boy, weighed 7 lbs. at birth, was suckled for nine months and gained weight well.

When nine months old the parents noticed that the limbs were limp and that the child moved them but little. Gradually the child lost the power of sitting up. The head seemed too heavy for the child, and when sitting up the chin rested on the breast. When three years old double cataract developed, and a year later operation was performed.

When eleven years old the boy was unable to stand or walk; there was marked wasting of the muscle of the upper arm, the pelvic muscles and the muscles of the back and neck, and especially of the supra and infra spinati, the latissimus dorsi, biceps, triceps and deltoid. The shoulders were "loose." The muscles of the forearms, hands, and legs below the knee were relatively well developed. The motility of the atrophied muscles was nowhere completely absent. No fibrillary contractions were present. There was diminished faradic response in the affected muscles, but no R.D.

The knee jerks and ankle jerks were absent.

The educational development of the child was backward, but the boy was not unintelligent.

CASE II.—Sister of the above, aged 6, was quite well till nine months of age, when it was noticed that the legs were wasting. The child never learnt to walk and sat in a sideways position.

When three years old she, like her brother, developed double cataract.

This child presented symptoms very similar to those of her brother. If an attempt was made to stand the child on her legs, she fell, and she could only sit when propped up. The deep reflexes were absent.

The author discusses the diagnosis between poliomyelitis, the various types of myopathy, the peroneal group, and the muscular atrophy described by Werdnig and Hoffmann, and he comes to the conclusion that the cases probably belong to the last group. As the author rightly points out, it is impossible to be certain that the cases belong to this group rather than to the myopathies without a pathological examination.

FRED. E. BATTEN.

A NEW SYMPTOM OF ELECTRICAL REACTION OF DEGENERATION. (670) TION. E. REISS, *Verhandl. d. deut. kong. f. Inn. Med.*, 1910, S. 536.

A HEALTHY muscle contracts sharply when the galvanic circuit is suddenly closed, whereas if the circuit is closed with a very weak current, and the strength very gradually increased, no contraction will follow until a very much stronger current is flowing.

A degenerated muscle, on the other hand, will be found to react equally well to any given strength of current, whether the current is sent through by sudden closure or by gradual working up. This is what is found when the reaction of degeneration is completely developed; in incomplete cases the difference in strength of current required to elicit a minimal contraction by sudden closure and by gradual working up will be found to be less in the case of the affected muscle than in the corresponding healthy one.

J. H. HARVEY PIRIE.

MULTIPLE SCLEROSIS. (Über Multiple Sklerose.) M. VÖLSCH, (671) *Fortsch. der Med.*, Jg. 28, Nr. 21, May 26, 1910.

THIS paper gives the results of a very careful consideration and comparison of the early signs and symptoms in thirteen cases of fully-developed disseminated sclerosis with the view of deciding which, if any, may be looked upon as pathognomonic or essential. The conclusion come to is in agreement with the experience of other writers, that it is rather the grouping of the symptoms which distinguishes it from other conditions.

The author agrees with those who regard the process as due to the action of an exogenous "noxa" causing multiple perivascular areas, in which there is a primary degeneration of the myelin sheath, but he parts company with them in looking upon the glia hyperplasia, not as merely a secondary and reparatory process, but as also due to the irritant which incites the inherent tendency of the glia to proliferate.

JAMES W DAWSON.

ON THE PSEUDOTABETIC FORM OF MULTIPLE SCLEROSIS.(672) (*Über die pseudotabische Form der multiplen Sklerose.*)H. OPPENHEIM, *Neurolog. Centralbl.*, No. 20, 1910.

OPPENHEIM records four cases of multiple sclerosis, in which the symptoms, at one period, simulated those of tabes dorsalis.

In the first case the chief symptoms were inco-ordination of the movements of the legs and arms, atony of the muscles, loss of knee jerks, shooting pains, paræsthesia, weakness of the bladder, tachycardia, and diplopia (paresis of the left external rectus). But against the diagnosis of tabes were the presence of nystagmus, the rapid development of the ataxia and of anæsthesia or diminished sensation (for touch, pain, and temperature). On the first examination Oppenheim considered the case to be one of multiple sclerosis, in which the lesions affected chiefly the sensory conducting paths of the spinal cord. The further course of the disease showed that this diagnosis was correct. The ataxia and anæsthesia diminished and the clinical features of the case changed gradually, until at the end of eighteen months the symptoms of multiple sclerosis were unmistakable. The knee jerks returned, ankle clonus developed, and the Babinski and Oppenheim reflexes could then be obtained. The ataxia was replaced by motor weakness, the girdle sensation disappeared, and the sensory disturbances diminished. Other symptoms were intention tremor in the arms, nystagmus, dysarthria, attacks of involuntary laughing, loss of abdominal reflexes, and ataxia of the cerebellar type.

In a second case paræsthesia and ataxia of all four limbs developed acutely. The symptoms were somewhat similar to those in the case just recorded. Nystagmus was present, but there was no diplopia. In course of time the Babinski type of plantar reflex and optic atrophy developed.

In a third case the chief symptoms were ataxia, loss of knee jerks, paræsthesia, and anæsthesia. Later amblyopia, with a central scotoma, and other signs of multiple sclerosis developed.

In a fourth case the history pointed to multiple sclerosis, but when first seen by Oppenheim the symptoms suggested tabes. The patient complained then of weakness and unsteadiness in the leg, and of numbness in the feet. The knee jerks were lost, the muscular tone was diminished. Ataxia of the movements of the legs, diminution of the sensation for pain and temperature in the legs, and Romberg's sign were detected. At a later date double optic neuritis developed, which was followed by partial optic atrophy with a central scotoma for colours. Later atony, ataxia, and loss of knee jerks were the prominent symptoms. Improvement occurred, and finally the remaining symptoms were loss of the abdominal reflexes and pallor of one optic disc.

Oppenheim concludes that there are very rare cases of disseminated sclerosis, which at the onset, or in the course of the disease, resemble tabes dorsalis. The symptoms suggesting tabes are hypotonus, loss of tendon reflexes, ataxia, anæsthesia, Romberg's sign, tachycardia, diplopia, and pupillary symptoms. Usually, however, other symptoms are detected which do not occur in tabes, but point to disseminated sclerosis. Such symptoms are nystagmus, loss of the abdominal reflexes, and the visual failure which is characteristic of disseminated sclerosis. Or, in addition to the loss of knee jerks, there is an increased tendo Achillis reflex, or one of the spastic reflexes is present.

More important still in the differential diagnosis are the development and course of the disease, which differ from tabes. The symptoms in the pseudo-tabetic form of disseminated sclerosis develop in an acute or sub-acute manner and extend rapidly, and show a tendency to vary or subside. Also the examination of the serum and cerebro-spinal fluid is of service in the differential diagnosis.

Moreover, the further course of the disease, or the previous history, shows that the case is simply an unusual form of disseminated sclerosis. The subsidence of tabetic symptoms is followed by the development of typical signs of disseminated sclerosis, or the previous history shows that such signs were present at first.

Oppenheim thinks his cases show that at one stage of the disease the symptoms may correspond to those of tabes, but this pseudo-tabetic type is, of course, very rare.

R. T. WILLIAMSON.

**DISSEMINATED CEREBRO-SPINAL SCLEROSIS FOLLOWING
(673) PUERPERAL INFECTION. (Sclérose en Plaques Disséminées
de l'Axe Cérébro-spinal, Consécutive à une Infection Puer-
pérale.)** M. POTET, *Arch. Générales de Méd.*, Oct. 1910, p. 577.

PATIENT, aged 32, with good family and personal history, was delivered of a child at the eighth month on 14th February 1906. The accouchement was followed by a sub-acute post-partum infection. The child died one month after birth from malnutrition: the mother all along was obsessed with the idea that the child could not live as it was premature. Two months after delivery she became disturbed, with troubles of vision and weakness of left arm and left leg, with stiffness, tingling, and general lassitude. On admission to hospital on 11th October there was great difficulty in the movements of left arm and both legs: the Babinski sign was positive on right side: there were no trophic disturbances. Slow oscillatory movements of the head were

present: speech was difficult, hesitating, and slightly explosive: there was no nystagmus. The condition was diagnosed as disseminated insular sclerosis, due to infection of the central nervous system, originating in the pelvic condition. The patient became steadily worse, and died on 8th June 1907 with the symptoms of bulbar paralysis. An autopsy was not granted.

The author suggests that the patient's disappointment at a premature confinement and her "fixed idea" might bring about a lowered resistance of the nerve centres to the contagium circulating in the body.

JAMES W. DAWSON.

**A CONTRIBUTION TO THE SYMPTOMATOLOGY AND SURGICAL
(674) TREATMENT OF SPINAL CORD TUMOURS. J. RAMSAY
HUNT and G. WOOLSEY, *Annals of Surg.*, Sept. 1910.**

THE writers record in detail thirteen cases of spinal cord tumours submitted to surgical treatment. Hunt discusses the subject from the diagnostic aspect. He finds that there is not much difficulty in the general diagnosis of spinal tumours, but that there is often considerable difficulty in determining whether a growth is intra- or extra-medullary. When there is doubt on this point he advises an exploratory laminectomy without delay, for sometimes in the course of an exploratory operation localised serous effusions within the meninges (meningeal cysts) are found, and the evacuation of these may be attended with beneficial results even though the growth be not touched. The segmental root pains are of the greatest value in determining the level of the lesion: they are to be referred to a compression of a segment from which the root springs, and not to pressure upon the root in its intra-spinal course. In extra-medullary neoplasms the course of the affection suggests that the tumour is growing in width and not in length. He considers that a dissociated anaesthesia cannot be regarded as characteristic of central tumours, but may be encountered in vertebral and extra-medullary lesions as well; he has observed, however, "that tactile sense under these circumstances, when present, is definitely obtunded when compared with a normal area, which in some cases serves to separate this form of sensory disturbance from the dissociated anaesthesia of the syringomyelic type."

He lays special emphasis on a symptom which he has repeatedly observed in cases of extra-medullary tumour in the cervical region. "This consists of a distinct girdle sensation, or constriction, situated at the umbilical level or in the lower thoracic zones." It is in all probability caused by pressure and irritation of intra-spinal tracts.

Of the thirteen cases explored, five were extra-medullary fibro-sarcomata. In four of these the tumour was successfully extirpated. In one of these a recurrence took place, but was successfully removed. In another there was an inoperable recurrence within a year; the other two remained well. One case was an extra-medullary endothelioma which was successfully removed. In two cases of sarcoma of the meninges the growth was irremovable. One case, a carcinoma of the spine, and another, a melanoma of the sacrum, were explored, but nothing further was done. Two cases turned out to be intra-medullary growths, and in one of these the evacuation of two drachms of cystic fluid from the interior of the cord gave some relief.

Woolsey discusses the surgical aspect of the question. He prefers a simple piecemeal laminectomy to an osteoplastic operation, and always gives a dose of urotropine half an hour before operation, as recommended by Crowe, and continues the administration of this drug in divided doses till the wound has healed.

The arachnoid over the tumour is usually much thickened and oedematous, and may contain cystic collections of fluid between its lamellæ. He estimates the mortality for simple exploratory laminectomy at 10 per cent. In the after-treatment of the case he considers the prone position unnecessary, and prefers the dorsal or lateral position, which is much more agreeable to the patient. Immediately after the operation there is nearly always an increase in the paralysis, but this is promptly recovered from, and the root pains are nearly always speedily and markedly relieved. The ultimate result after the extirpation, of tumours is favourable. The sarcomata are relatively non-malignant, and the distinction between them and the endotheliomata is largely a matter of terms.

D. P. D. WILKIE.

THE APPEARANCE OF A MARKED PHASE I REACTION, BUT (675) ABSENCE OF LYMPHOCYTES IN SIX CASES OF SPINAL CORD TUMOUR. (Über das Vorkommen von starker Phase I. Reaction bei fehlender Lymphocytose bei 6 Fällen von Rückenmarkstumor.) M. NONNE, *Deut. Zeit. f. Nervenheilkunde*, Bd. 40, Heft 1 and 2, 1910, p. 161.

In the thirty-sixth volume of the above journal, Nonne, with Apelt and Schumm, described a globular reaction (Phase I.) in the cerebro-spinal fluid.

This reaction is not necessarily indicative of syphilis—in fact, it may be present in any case of organic disease of the cerebral nervous system. Usually, however, it is only slightly marked.

Nonne now describes six cases of spinal tumour (non-syphilitic)

in which the reaction was highly marked, and adds that he has not so far met with this combination of absence of lymphocytes and presence of a marked globular reaction in other organic diseases of the nervous system.

He is not yet prepared to say how far this condition is of diagnostic value, but insists that the diagnosis of spinal tumour must not be negatived if the reaction he has described is not present.

W. B. WARRINGTON.

SEROUS MENINGITIS OF OTITIC ORIGIN WITH UNUSUAL (676) COURSE. (*Meningitis serosa otogener Genese mit eigenartigem Verlauf.*) Voss, *Verh. d. deutsch. otol. Gesell.*, 1910, S. 242.

THE patient, a man of 24 years, had had a mastoid operation on the left side two years before. On admission he complained of earache and the left tympanic membrane was incised; in spite of this he complained of headache, and two days later had a rigor. Lumbar puncture was negative, and there was no mastoid or cranial tenderness and no stiffness of the neck: Kernig's sign absent. At the mastoid operation granulations were found in the antrum and pus in the region of the sigmoid sinus (streptococci on culture): the sinus bled freely at the operation. On the following day nystagmus was noted to the sound side (right) and optic neuritis in the right disc: the pulse became slow and the patient vomited and was drowsy: puncture of the cerebellum was negative. Two weeks later, though the pulse remained slow, the case was doing well and the patient was allowed to get up. A few days later he developed sudden pain in the loins and Kernig's sign: lumbar puncture yielded 40 c.cm. of clear sterile fluid: four days later lumbar puncture gave same result: the mastoid wound healed well. Kernig's sign was still present two months later. Voss thinks that the serous meningitis was due to tearing of adhesions in the region of the posterior fossa, and he advises that patients should be kept in bed till the inflammatory process has completely subsided.

J. S. FRASER.

HEMIPLEGIA FOLLOWING ACUTE INFECTIONS. W. A. JONES (677) and A. S. HAMILTON, *Journ. Amer. Med. Assoc.*, 1910, ii. p. 1247.

THE writers record five cases, two of which followed diphtheria, one pneumonia, one was an encephalitis of doubtful origin, and one was an acute septic encephalitis secondary to bladder obstruction.

J. D. ROLLESTON.

TRANSIENT CEREBRAL CRISES AND SEIZURES. J. D. HEARD,
(678) *Edin. Med. Journ.*, Nov. 1910, p. 417.

In this paper Professor Heard records the cases of four elderly men, all subjects with marked arterio-sclerosis and sufferers from intestinal digestion, in whom there were single or repeated attacks of paræsthesia, hemianopsia, aphasia, hemiplegia, unconsciousness, etc. In none was there any evidence of general paralysis, of heart-block, or of advanced renal disease. The attacks were apparently to be attributed to arterio-sclerosis of the cerebral vessels. He then goes on to a consideration of the various views which have been put forward to account for those attacks: (1) Localised poisoning of brain cells; (2) intermittent closure of cerebral blood-vessels; (3) temporarily lowered blood pressure—where the vessels are so narrowed that the blood supply can only be kept up by a permanently high pressure; (4) localised cerebral œdemas. The second cause is probably that acting most frequently, and it is discussed rather more fully also in its relationship to vaso-motor centres, and the bearing which migrainous attacks have on this question. J. H. HARVEY PIRIE.

DOUBLE OTITIC TEMPORO-SPHENOIDAL ABSCESS. (Doppelter
(679) *otitischer Schläfenlappenabszess.*) RICHARD MÜLLER, *Zeitsch.
f. Ohrenheilk.*, B. lxi., Heft 2.

THE case was originally one of acute suppurative otitis media on the left side, with tenderness on pressure on the mastoid process: after paracentesis the discharge stopped for a time, but later on the pain returned, accompanied by headache and tinnitus. There appears to have been considerable delay in the performance of the mastoid operation, but afterwards the patient did well for a time: later, however, pain and fever returned and the patient lost weight, although the left tympanic membrane remained healed. A swelling formed above and in front of the left ear, and five days later the patient was sick and suddenly became unconscious: the veins of the fundus were dilated. Amnesic aphasia was now noted: when shown a glass the patient said, "That is for—," and then made the movement of drinking with his right hand. At the second operation the bone in the temporal region was found to be very thin and soft and the dura thickened: a large abscess was evacuated from the left temporo-sphenoidal lobe (pure culture of streptococci in the pus): although a hernia cerebri did not form, five days later the patient again complained of headache, and deafness in the *right* ear was noted (the right ear was normal on inspection).

Facial paralysis developed on the right side, and later general convulsions: death. Post-mortem, meningitis, especially over the pons and medulla: the tegmen tympani showed no inflammatory change: a second tempo-sphenoidal abscess was discovered above, in front of and internal to the one opened at the second operation: the brain in this region was markedly softened. Müller points out the unusual route of brain infection in this case, and thinks that earlier operation might have led to a different result. He calls attention to Reinking's dictum: "The absence of hernia after the evacuation of an abscess does not speak with certainty against the existence of a second abscess."

J. S. FRASER.

DEAFNESS DUE TO LESIONS OF THE BRAIN. M. ALLEN STARR
(680) (New York), *Journ. Nerv. and Ment. Dis.*, July 1910.

TOTAL bilateral deafness due to brain lesions is very rare, as each cortical centre in the temporal lobes receives impulses from both ears. In the recorded cases of lesion of both temporal lobes the two sides have not been affected simultaneously. Starr points out that the auditory tracts are not continuous, but are made up of a series of short fibres with intercalated neurones: for this reason a loud sound gives rise to an involuntary start, a turning of the head and eyes, and often to a dilatation of the pupils. The present case was that of an alcoholic female, aged 42, who suffered from arteriosclerosis: she had had a previous slight left-sided hemiplegia, and one year later had a second attack, in which the right side of the face was paralysed along with the left arm and leg: loss of muscular sense, dysphagia and inability to pronounce words were also present (the patient could not swallow if she thought about it, but, if she took food mechanically, there was no difficulty). From the fourth day of the attack until death she was totally deaf in both ears, as tested by bone and air conduction. Although she was quite deaf the patient moved her head when a loud sound was made, and Starr thinks that this fact proves that the acoustic nuclei were not involved and that the reflex paths connecting them with the spinal cord were not affected. The patient was able to write and read, and understood all that was conveyed to her in writing and by the deaf and dumb alphabet. Starr diagnosed thrombosis of one of the branches of the basilar (which enters the raphé of the pons), giving rise to softening in the caudal portion of the pons on the right side and affecting the pyramidal tract, the lemniscus and the formatio reticularis: no autopsy was allowed. The author gives an account of numerous cases (from the literature) of deafness due to lesion of the pons: he notes that deafness was most marked in the ear on the same side as the lesion if the

acoustic nucleus alone was affected: the deafness was bilateral if the trapezoid fibres were involved in their decussation in the raphé: the deafness was on the side opposite to the lesion if the superior olivary nucleus and the lateral part of the lemniscus were affected: lesion of one corpus quadrigeminum causes deafness in the opposite ear.

J. S. FRASER.

THE PULSE IMMEDIATELY PRECEDING THE EPILEPTIC
(681) **ATTACK.** ALEXANDER G. GIBSON, T. SAXTY GOOD, and R.
GREENWOOD PENNY, *Quart. Journ. of Med., Oxford*, 1910, iv. 1.

THE authors have obtained tracings by means of Erlanger's sphygmomanometer of the pulsations of the brachial artery immediately preceding the attack in five epileptic seizures. The attacks occurred in two cases, young male adults from the asylum class suffering from idiopathic epilepsy and mild dementia the result of the epilepsy. Both were able to do a certain amount of work. The records show conclusively—first, that up to the time when the movements of the arm affect the tracing there was no cessation of the pulse. In one instance the fit was observed to be in progress for several seconds before the movements became so general as to affect the record; secondly, that in all instances there was a gradual increase in the rate of the pulse, culminating in the onset of the fit. The authors are inclined to interpret the alteration in the type of the tracing as the fit approaches as meaning an increase in blood pressure immediately preceding the fit, associated with causes other than an increase in pulse rate. It is certain that in these cases there was no lowering of general blood pressure sufficiently marked to account for the fit on the assumption of cerebral anæmia due to a general cause.

AUTHORS' ABSTRACT.

THE OUTLOOK OF SUFFERERS FROM EXOPHTHALMIC
(682) **GOITRE.** W. HALE WHITE, *Quart. Journ. of Med.*, 1910, iv.
89.

THIS paper gives analysis of 102 cases of exophthalmic goitre who did not undergo any operation for the disease. The total deaths were 15, whereas the expected deaths, according to the "Healthy Females' Experience Table," should have been 8. Of the 87 patients who were still alive, 61 had done well, 21 were moderately well or better, and 5 were not improved. Of the 61 cases who did well, 36 were mild or average cases, 16 were severe, and 9 were very severe cases.

Records are also given of 11 cases in which an operation was performed. Four died as a result of the operation, 1 is perfectly well, the others are much better, but not completely cured.

The author's analysis of his cases shows that many patients, even those seriously ill, may recover and remain well for years. The most important treatment is absolute rest in bed for weeks or months, with freedom from anxiety. Probably it is because private patients are better able to rest than hospital cases that the outlook for the latter is more serious than for the former.

W. T. RITCHIE.

TETANY DURING PREGNANCY. (*Zur Lehre der Tetania gravidarum.*) EDUARD FRANK, *Monats. f. Geburts. u. Gynäk.*, Okt. 1910.

TETANY may be associated with various conditions:—(1) Idiopathic; (2) affections of stomach or intestines; (3) acute infectious diseases; (4) certain poisons; (5) pregnancy; (6) after removal of a goitre; (7) it may be associated with other nervous diseases. Frank records five cases occurring during pregnancy, and from these and other recorded cases draws certain deductions. The affection is commoner in multiparæ than in primiparæ, and it tends to increase in severity with each successive pregnancy. It usually shows itself first in the second half of pregnancy. The upper extremities only may be affected, the hand assuming the typical "accoucheur's position," but in attacks in later pregnancies the face and leg muscles may also be implicated. As soon as the pregnancy terminates the tetany passes off, and the patient is perfectly well till she again becomes pregnant.

It has never been determined whether the cause of tetany during pregnancy is the same as that producing the condition under other circumstances. Experimental investigations have shown that the parathyroids can be partially removed from animals, and that no symptoms result so long as the animal is not pregnant. Should pregnancy supervene, symptoms of tetany appear. From this fact it has been concluded that there is a special toxin produced during pregnancy, and that this is the cause of the tetany. Frank, however, is of the opinion that the toxin, of whatever nature it may be, is the same in cases occurring during pregnancy as in those occurring under other circumstances. He is led to this opinion because of the exact similarity of the symptoms in both cases.

The milder cases can be treated by rest and the administration of bromides, but when the muscles of the face, larynx, and lower extremities are affected the pregnancy ought to be terminated, and the possibility of future pregnancies prevented. In one of his

cases Frank, after inducing abortion for severe tetany, sterilised the patient by ligaturing and dividing the Fallopian tubes.

B. P. WATSON.

EXPERIMENTAL CONTRIBUTION TO THE STUDY OF TETANY

(684) **IN CHILDREN.** (*Experimenteller Beitrag zur Forschung über Tetanie des Kindesalters.*) PESCA, *Archiv für Kinderheilkunde*, Bd. 54, H. 1-3, 1910, S. 1.

THIS is an excellent treatise on the literature, etiology, and clinical features of tetany, together with the report of an experiment which in the author's opinion serves to disprove the theory that the condition is due to want of lime in the bodily tissues.

For his experiment he employed two dogs, one as control and one fed on a lime-free diet.

The period of dieting was eleven weeks, and the dogs were killed by cutting the carotids.

The animal on the lime-free diet showed no symptoms of tetany, although post-mortem there was found to be marked diminution in the lime content of the tissues.

A. DINGWALL FORDYCE.

THE LOCAL DIAGNOSIS OF HEMIANOPSIA. (*Zur topischen*

(685) *Diagnose der Hemianopsie.*) BEST, *Munch. med. Woch.*, Aug. 23, 1910.

THE author finds from a study of the work of numerous observers that certain differential signs may be expected in two forms of hemianopsia.

In cortical hemianopsia.—The vertical boundary of the field of vision skirts round the fixation point. The pupil is unaffected. Wilbrand's prism test is positive.

In tract hemianopsia, including lesions of the external geniculate body.—The vertical boundary of the field of vision passes through the fixation point. The eye which is deprived of its temporal field has the larger pupil. The hemianopic pupil reaction is present and Wilbrand's prism test is negative.

The signs of lesions between cortex and tract have not yet been definitely classified. Recently he has investigated a case in which left homonymous hemianopsia followed a bullet wound in the right temple. By X-rays the bullet was shown to be near the sella turcica and to the right of the middle line. Three and a half months afterwards each field was bounded on the left side by a straight line passing through the fixation point. Vision was

$\frac{5}{5}$ on each side. Wilbrand's test was negative. The positions and movements of the eyes were normal. The right pupil, which dilated normally with cocaine, measured 3 mm., the left 4.5 mm. The hemianopic pupil reaction was distinct on each side. The fundi were normal and optic atrophy was not present.

Having regard to the position of the bullet, Best regards this case as one of pure tract hemianopsia, although the absence of optic atrophy would place the lesion in or just above the external geniculate body.

Unlike most bullet wounds in this region no gross nerve lesions outside the tract were produced.

All the differential signs mentioned above were present.

As regards the boundary line of the field in the macular area, the author points out that the ordinary perimeter has not a long enough radius for exact observations and a campimeter should be used at a greater distance.

It should be remembered that the anisocoria may be congenital or physiological. To elicit the hemianopic pupil reaction the influence of the fovea should first be excluded by exposing it to a strong light before testing the periphery of the retina. Wilbrand's prism test is only of value when positive.

As to treatment, the patient wears a prism of 10° apex in before his left eye, which enlarges his field 5° to the left and is of some assistance to him.

H. M. TRAQUAIR.

CHOKED DISC IN ITS RELATION TO CEREBRAL TUMOUR AND

(686) **TREPHINING.** ALFRED SAENGER, *Journ. Amer. Med. Assoc.*, Sept. 24, 1910, p. 1100.

THIS address was given by Dr Saenger at the annual meeting of the American Medical Association held at St Louis in June 1910. The first part of it consists of a short review of the theories that have been advanced to explain choked disc. In the remainder of the paper the writer lays stress on the value of the decompression operation in inoperable tumours; the important time for operating is at the very beginning of visual failure. He thinks that the results of surgical interference go far to prove that increased intracranial tension is the main cause of choked disc. Examination of cases of choked disc shows that in some cases there is no dilatation of the vaginal sheath, while in other cases he has seen dilatation of the vaginal sheath with no swelling of the disc. Many of his cases show only very slight microscopic changes. He thinks that many previous observers have been deluded, by the marked endothelial proliferation which sometimes is seen, into talking of inflammation where there is no real inflammation. The last part of the address is devoted to a series of clinical cases,

including five in which, after simple decompression without any tumour being found, all, or nearly all, signs of intracranial mischief disappeared. In the discussion which followed the address Mr Parsons dwelt on the dangers of delay in operating from the point of view of vision.

Dr Bordley remarked that it was impossible to tell from the appearances of the disc what the result of operation would be on sight. He was confident that it was not possible to locate the tumour by a study of the discs, though he thought that the greatest change in the optic nerve was on the side of the tumour in about 65 to 75 per cent. cases. In replying, Dr Saenger said that he felt sure that individual changes in the optic foramen were responsible for the lack of development of choked disc. LESLIE PATON.

**ONE KNOWLEDGE OF ANGIONEUROTIC AND HÆMATO-
(687) GENOUS INFLAMMATIONS OF THE SKIN. (Die Lehre
von der angioneurotischen und hæmatogen Hautentzünd-
ungen.)** TÖRÖK, *Dermatol. Ztschr.*, Okt. 1910, p. 707.

AFTER reviewing all the important communications on this subject, the author concludes that the so-called angioneurotic diseases (erythema and urticaria) cannot, either on experimental or anatomical grounds, be considered as produced through the influence of the vaso-motor nervous system. Clinical observations which have been brought forward as evidence of the vaso-motor origin cannot be recognised as such. By observation of the records of cases, the author thinks (1) that a great part of these observations are not well made, and that wrong deductions are drawn from them; and (2) that the results of these observations can be explained just as well by the assumption of their hæmatogenic as of their angioneurotic origin. He concludes that from histological, bacteriological, chemical, and experimental results one must conclude that the so-called angioneurotic skin changes are skin inflammations which, in the cases where they arise from external causes, *e.g.* urticaria, are produced through the circulatory system alone.

R. CRANSTON LOW.

**THE SYSTEMATISATION OF CUTANEOUS LESIONS IN NERV-
(688) OUS DISEASES. (La systématisation des lésions cutanées
dans les maladies nerveuses.)** F. ROSE, *Journ. de Neurol.*,
Nos. 15, 16, and 17, 1910.

In an article of forty pages on the above subject the author comes to the following conclusions:—

In lesions of the cerebral hemispheres, one may find disturb-

ances of the sweat secretion, vaso-motor, pigmentary and atrophic disturbances, and alterations in the growth of the hair. These occur on the side opposite to the lesion, and arise from an interference with the regulating centres for these functions; at least, that is so with regard to the vaso-motor disturbances and disturbances of the sweat apparatus. They may affect the whole or only part of the paralysed or hemi-anæsthetic side. If the sweat secretion is disturbed, it is generally on the face that it occurs. If the limbs are affected, it is usually at their extremities. Vaso-motor disturbances limited to a monoplegic limb must be attributed to a cortical lesion, whereas subcortical lesions affecting the caudate nucleus give rise to disturbances of the one half of the body.

There do not seem to be sweat or vaso-motor centres in the cerebral peduncles and the pons. Lesions in these places produce disturbances which correspond in distribution to the anæsthesia present.

In the medulla, nothing is definitely known of the sweat centres. Babinski's works have shown that the vaso-motor centres are bilateral, and situated near the ocular sympathetic centres.

Affections of the cervical sympathetic are frequently accompanied by sweat disturbances of one half of the face, and less frequently by vaso-motor disturbances.

In affections of the peripheral nerves, sweat, vaso-motor and trophic disturbances are not, as a rule, strictly limited to the area corresponding to the distribution of the affected nerve, but extend beyond that.

In the spinal cord, one can distinguish between a lesion of the sweat centre and a lesion of the nerve tracts. A lesion in the latter causes hemi-hyperidrosis and hemi-anidrosis; a lesion in the former, a lesion of one or both sides, sometimes of the neck, face, upper or lower limb, and sometimes of the thorax or abdomen. Cases of sweating in a nerve-root distribution do not exist. In Schlesinger's and Schnitzler's case of syringomyelia, on the contrary, there was a hyperidrosis of the arm and forearm, the hand being unaffected, and therefore a segmental distribution. The upper limit of these disturbances on the limbs wants in preciseness, such as can be seen in the middle line, and allows of no conclusions. As for the vaso-motor disturbances, these are never exact. They have always a tendency to be localised to the extremities of the limbs, or to predominate there, because of the particular structure of the vessels of these regions. One cannot speak of a nerve-root or spinal arrangement in the meaning of Brissaud. In purpura, however, a nerve-root distribution may be met with. The medullary centres are not well known. Ac-

according to Klippel and Monier-Vinard, the cervico-dorsal centres control a peripheral distribution analogous to the corresponding sweat centres.

Trophic disturbances are to be considered as the result of reflexes of an irritative or inhibitory nature. Certain of them are a result of the combination of the perversion of the trophic influence of the nervous system and the local causes which determine their localisation. Others, in which a similar interpretation is not admissible, have a great tendency to be localised to the extremities, but in the form of patches or even of bands (scleroderma). Their distribution appears, partly at least, to be determined by the concomitant vaso-motor disturbances.

In regard to the systematisation of sweat, hair, vaso-motor, and trophic disturbances, we are in ignorance, owing to our lack of knowledge of the cutaneous areas of the sympathetic. All that we can say is that these disturbances usually, but not exclusively, accompany sensory troubles, that the nerve-root distribution has almost nothing to support it, and the distribution in bands is only supported by the case of Schlesinger and Schnitzler.

Herpes zoster and zosteriform eruptions arise in the vast majority of cases from a lesion in the spinal ganglia and have a nerve-root distribution. There do exist, however, some cases of zoster of peripheral origin. As for the segmental arrangement of Brissaud, one can only cite two cases.

Amongst *nævi*, one must distinguish between the simple vascular *nævus* and the warty, pigmented, and hairy *nævi*. In the former a nerve systematisation is only occasionally suggested, whereas in the latter a nerve arrangement must be considered. The vascular *nævi* seem to be due to an embryological developmental disturbance of the brachial buds of the face, or to a vascular inflammation. Their systematised appearance on the face is explained by their pathogenesis.

In the "nerve" *nævi* none of the nervous or cutaneous theories which have been proposed can explain all the cases. We have only seen one single case which pointed to a systematisation strictly corresponding to either the peripheral nerves, nerve roots, or spinal cord. That was a case of ichthyosis occupying the distribution of the four last lumbar and the sacral roots. On the other hand, one frequently finds cases where an association between the lesion and a nerve root might be accepted. Likewise the pigmentation of the limbs of certain animals might be interpreted on the Brissaud theory. We are inclined to believe rather in the cutaneous origin of *nævi*, the nervous system only acting as an excitant of epithelial proliferation.

The same remarks apply to the systematised acquired dermatoses as to the *nævi*.

In the infectious eruptions, although the bathing-drawer distribution of certain rashes suggests a nerve influence, other peculiarities cannot be thus explained. There exist, however, cases of purpura with a nerve-root distribution.

In scleroderma in patches or bands the nerve-root systematisation is not explained solely by the nervous theory. Sympathetic vaso-motor influences come into play there. Speaking generally, the spinal segmentation in Brissaud's meaning has no support, either anatomically, physiologically, embryologically, nor clinically.

Too much systematisation of skin lesions is to be avoided. In cancer of the face the ulceration may exceptionally occupy exactly the distribution of one or more branches of the fifth nerve, but that is no argument that it is a manifestation of a nerve influence, as Cheatle would have us believe.

R. CRANSTON LOW.

**THE SYSTEMATISATION OF CUTANEOUS LESIONS IN NERV-
(689) OUS AND MENTAL DISEASES. (La systématisation
des lésions cutanées dans les maladies nerveuses et mentales.)
F. SANO, *Journ. de Neurol.*, Nos. 15, 16, and 17, 1910.**

THE author brings forward a theory to try and explain skin lesions which apparently depend on some nervous influence. He assumes that the dermatomeres (embryonic segments of the skin), which are arranged according to the sensory nerve distribution on the surface of the skin, correspond to the cutaneous areas which develop from the same segment of the embryo. He considers that skin lesions may be due to a reflex nerve action, such as one finds in the ordinary muscles of the body. The muscles are kept in a state of tonus by a simple sensory-motor reflex arc, all the parts of which belong to the same metamere of the embryo. In the same way in each cutaneous area there is a reflex arc. Impulses pass up to the sensory nuclei and down from the pilo-motor or secretory nuclei to the skin. This reflex arc occurs through different segments of the cord. In the embryo the sensory skin area and its corresponding pilo-motor or secretory area belong to the same metamere. But just as the internal organs change their position during development, and yet carry the nerves of the same metamere with them, but derive their blood vessels from the situation in which they ultimately find themselves, so the same condition may result in the metameric segments of the skin. The primitive reflex arc, which controls the vessels of the skin, may correspond to a very different topographical area from that of the dermatomere,

which, for the needs of its function, has altered its position in the body.

From a study of the arrangement of the motor cells in the anterior cornea of the cord, he concludes that there may be vaso-motor nuclei which are analogous to the motor nuclei for the muscles. He believes that trophic disturbances must be attributed to lesions in the motor (pilo-motor, vaso-motor and secretory) tracts to the skin as much as to lesions in the sensory tracts from the skin.

R. CRANSTON LOW.

SYPHILIS IN THE MUSULMAN NATIVES OF TUNIS. (La (690) *syphtlis chez les indigènes Musulmans de Tunis.*) R. BROU, *Ann. de mal. vénér.*, 1909, p. 483.

SYPHILIS is very widely spread among the native population of Tunis; according to some observers more than two-thirds of the population are affected. Primary lesions are very seldom seen. Among 337 cases with tertiary lesions Brou did not see a single case of cerebral or spinal syphilis, tabes or general paralysis. Cutaneous and osseous lesions, on the other hand, are common. The relative benignity of the disease is due partly to the race, manner of life, and climate, and partly to the fact that a large number of those infected are the subjects of latent hereditary syphilis.

J. D. ROLLESTON.

A CLINICAL INVESTIGATION OF THE "WHITE LINE" OF (691) SUPRARENAL INSUFFICIENCY. (La ligne blanche dite sur-rénale. *Recherches cliniques.*) R. LAUTIER and G. GRÉGOIRE. (Réunion biol. de Bordeaux.) *C. R. de la Soc. de Biol.*, 1910, lxxviii. p 190.

ACCORDING to Sergent the phenomenon of the "white line" is pathognomonic of suprarenal insufficiency and arterial hypotension (*v. Review*, 1907, p. 324). To test the accuracy of his view the writers carried out investigations in 228 cases, and found that 110, or nearly half, did not conform to Sergent's rule. Of 145 who showed the "white line," 80 had normal tension or hypertension, and of 83 in whom the sign was not present, 30 had hypotension. The writers conclude that the phenomenon is not pathological, but is due to physiological dermographism.

J. D. ROLLESTON.

TREATMENT.**EXPERIENCES WITH "606" IN METASYPHILITIC DISEASE.**

(692) (*Erfahrungen mit dem Ehrlich-Hata Präparat No. 606 bei metaluetischen Erkrankungen.*) MAX MEYER, *Deut. med. Woch.*, 1910, p. 1832.

MEYER tested fourteen cases of metasyphilitic disease with "606," some intravenously and some intramuscularly. Of twelve cases of general paralysis four showed no change in Wassermann's reaction, four showed a diminution in its intensity, and in four the reaction at first became negative and then positive again. Clinically no case showed any objective improvement. A case of cerebral syphilis after the first injection showed a transitory improvement in gait and speech, but a second injection had no effect.

J. D. ROLLESTON.

FÖRSTER'S OPERATION. (*Die Förster'sche Operation*) (Sammel- (693) referat). A. SCHLESINGER, *Neurol. Centralbl.*, Sept. 16, S. 970.

FÖRSTER suggested resection of the posterior nerve roots for spastic paralysis. The object of the operation is to interrupt the reflex arc and to abolish reflex excitability. To prevent marked sensory disturbances not more than two adjacent nerve roots should be divided. In Little's paralysis the roots divided are lumbar 2, 3, 5 and sacral 2; for severe flexion contraction of the knee, lumbar 2, 3, 5 and sacral 1. For paralysis of the upper limb, cervical 4, 5, 7, 8 and dorsal 1.

Out of thirty-five cases there was an operative mortality of 17 per cent. The remote effects have been satisfactory, especially in cases of Little's paralysis. In these cases the patients, although previously unable to stand or walk, were later able to walk alone or with sticks. Voluntary motor power has generally improved, and there has been no ataxia as a result of the operation.

JAMES M. GRAHAM.

SOME INDICATIONS AND CONTRA-INDICATIONS FOR LUMBAR

(694) **PUNCTURE.** (*Einige Indikationen und Kontra-indikationen der Lumbalpunktion.*) HANS CURSCHMANN, *Deut. med. Woch.*, 1910, p. 1798.

UNLIKE Oppenheim, Curschmann holds that lumbar puncture has a therapeutical value, not only in epidemic cerebro-spinal, but in almost every form of meningitis, and mentions cases observed by him of fibrino-purulent meningitis after pneumonia, influenza, and

erysipelas in which complete recovery followed lumbar puncture. In meningism, especially in the pneumonia of children, apical pneumonia at all ages, influenza, secondary syphilis, and other infections where the cerebro-spinal fluid shows no increase of albumin nor pleiocytosis, but only hypertension, lumbar puncture is often beneficial. Three cases of undoubted tuberculous meningitis have been recorded (Freyhan, Riebold, H. Stark) in which recovery took place after repeated lumbar puncture. The operation is also of value in disease of the dura mater, especially pachymeningitis hæmorrhagica interna, and traumatic epi- and subdural hæmorrhage. Curschmann has not found lumbar puncture of any value in uræmia.

After some years' experience of lumbar puncture he has very rarely seen any disagreeable sequelæ. In the case of an obese patient suffering from syphilitic spastic paralysis collapse occurred, and required camphor injections, but the operation had been carried out in the sitting position. Since then Curschmann has always punctured in the recumbent position, and has had no similar experience. One hysterical patient had complete astasia-abasia after puncture, but this disappeared after suggestive faradisation. Infection as the result of puncture is very rare. Curschmann records a case in a woman, aged 58, whose cerebro-spinal fluid was at first clear and showed no evidence of meningitis; later it became purulent, and death occurred. The origin of the streptococcal infection was probably the lumen of the trocar. The usual surgical precautions had been taken.

The most important conditions in which lumbar puncture is contra-indicated are cases of hæmorrhage and tumours of the posterior cerebral fossa, especially of the cerebellum. Curschmann records a fatal case in his own practice of tuberculoma of the vermis cerebelli.

J. D. ROLLESTON.

Reviews

THE SEVERE ILLNESS OF GOETHE'S YOUTH. TUBERCULOSIS, NOT SYPHILIS. (Des jungen Goethe schwere Krankheit. Tuberculose, keine Syphilis.) Prof. B. FRÄNKEL. Pp. 16. Leipzig: Johann Ambrosius Barth, 1910. Price, M. 0.80.

SOME years ago the reviewer drew attention to an interesting pamphlet in which the posthumous charge of syphilis brought against Schopenhauer was successfully repudiated by Prof. Ebstein (*v. Review*, 1907, p. 660). The present pamphlet, which is a reprint from the *Zeitschrift für Tuberculose*, contains a similar refutation in the case of Goethe. The poet, like the philosopher, was probably often exposed to infection, but there is nothing to justify the

diagnosis of acquired syphilis in himself or of the inherited disease in his children. There is, on the other hand, a definite history given in *Dichtung und Wahrheit* of an attack of hæmoptysis, with which was associated a swelling of the neck—in all probability a tuberculous lymphadenitis. J. D. ROLLESTON.

THE PSYCHOSIS OF MAUPASSANT. A CRITICAL ESSAY.
(*Die Psychose Maupassants. Ein kritischer Versuch.*) WILHELM LANGE, *Separatabdruck aus Zentralbl. f. Nervenheilk. und Psychiat.* Pp. 18. Leipzig: J. A. Barth, 1909. Price, M. 0.60.

LANGE considers that syphilis was the chief cause of Maupassant's psychosis, whether this be regarded as general paralysis or lues cerebri. Neuropathic heredity, alcohol, and the abuse of morphia, ether, and cocaine may have acted as contributing causes. An interesting parallel is to be found in Nietzsche, who presents an almost identical pathological history. Lange thinks that the pessimism which is so prominent a feature in Maupassant's books, and possibly also his attitude towards women, is of pathological origin, and that many of his writings were influenced by his psychosis, entirely to their disadvantage. J. D. ROLLESTON.

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L. J. J. Muskens. "Prodromal, Motor, Sensory, and other Symptoms, and their Clinical Significance" (*Epilepsia*, Jan. 1909).

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J. Gordon Wilson. "Pain in the Ear and its Diagnostic Significance" (*Quart. Bull. of North-western Med. School*, March 1910).

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